ORAL ARGUMENT NOT YET SCHEDULED

Nos. 16-1314 (and consolidated cases)

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

SAMUEL MASIAS, et al.,

Petitioners,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, et al.,

Respondents.

ON PETITION FOR REVIEW OF ACTION BY THE
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

RESPONDENTS' INITIAL BRIEF

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February 12, 2018

CERTIFICATE AS TO PARTIES, RULINGS, AND RELATED CASES

Pursuant to D.C. Circuit Rule 28(a)(1), Respondent United States Environmental Protection Agency ("EPA") states as follows:

A. Parties and Amici

All parties and amici are identified in Petitioners' briefs.

B. Rulings under review

Petitioners seek review of EPA's final rule "Air Quality Designations for the 2010 Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard--Round 2," 81 Fed. Reg. 45,039 (July 12, 2016).

C. Related cases

Challenges to two area designations promulgated as part of the above final rule were severed and held in abeyance by this Court. Nos. 17-1173 & 17-1174; 17-1227.

Petitions for review challenging four Texas area designations promulgated in a Supplement to the above final rule, 81 Fed. Reg. 89,870 (Dec. 13, 2016), are pending before the Fifth Circuit and have also been held in abeyance. *See* Dkt. No. 17-60088 (and consolidated cases) (5th Cir.).

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GLOSSARY

APA	Administrative Procedure Act
CAA	Clean Air Act
EPA	Environmental Protection Agency
JA	Joint Appendix
NAAQS	National Ambient Air Quality Standard(s)
ppb	parts per billion
SIP	state implementation plan
SO_2	sulfur dioxide

JURISDICTION AND STANDING

Petitioner Kansas City Board of Public Utilities ("the Board") lacks standing to challenge EPA's designation of Wyandotte County, Kansas, as unclassifiable in regard to the 2010 1-Hour Sulfur Dioxide ("SO_2") Primary National Ambient Air Quality Standard ("2010 SO_2 NAAQS"). Argument § III(A) *infra*. Otherwise, the Court has jurisdiction over these petitions under 42 U.S.C. § 7607(b)(1), which provides for review in this Court of final actions taken by EPA under the Clean Air Act ("CAA" or "Act") that are either nationally applicable or of nationwide scope and effect.

ISSUES PRESENTED

The Act calls on EPA, in conjunction with affected states, to designate the air quality status of all areas of the country with respect to each national ambient air quality standard, or NAAQS. The merits issues presented in this case involve whether EPA reasonably considered and weighed technical data in determining the appropriate air quality designations for the 2010 SO_2 NAAQS for three separate areas: Colorado Springs, Colorado; Gallia County, Ohio; and Wyandotte County, Kansas. In the first two cases, environmental and citizen groups contend that EPA could have and should have used air quality modeling to support a more stringent designation of "nonattainment" rather than "unclassifiable." In the third case, the Board argues that available emissions data supported a designation of "unclassifiable/attainment" rather than "unclassifiable." These challenges present the following questions:

(1) The Colorado Springs, Colorado, designation:

Did EPA reasonably designate the Colorado Springs area as "unclassifiable" where both EPA and the State of Colorado determined that modeling proffered by commenters utilized airport meteorological data that was unrepresentative of the area, and the Agency otherwise lacked sufficient data to determine whether the area had attained the standard?

(2) The Gallia County, Ohio, designation:

Did EPA reasonably designate the Gallia County area as "unclassifiable" where air quality modeling submitted by the State utilized flawed background concentrations and, considered as a whole, the data before the Agency did not allow it to determine whether the area had attained the standard?

(3) The Wyandotte County, Kansas, designation:

a. Does the Board have standing to challenge EPA's designation of the Wyandotte County, Kansas, area as unclassifiable in regard to the 2010 SO_2 NAAQS, given that an unclassifiable designation imposes no new requirements on either the State or sources of SO_2 in that area?

b. If the Board has standing, did EPA reasonably designate the Wyandotte County area as unclassifiable based on the data before the Agency at that time, rather than relying on speculation regarding the effect of an emissions limit that was not yet federally enforceable or in effect?

STATUTES AND REGULATIONS

Relevant statutes and regulations are set forth in the attached Statutory and Regulatory Addendum.

STATEMENT OF THE CASE

Petitioners challenge a final rule issued under the Clean Air Act, wherein EPA designated the attainment status of 61 areas of the country in regard to the 2010 SO_2 NAAQS. *See* Air Quality Designations for the 2010 Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard—Round 2, 81 Fed. Reg. 45,039 (July 12, 2016) ("Round 2 Rule"). Petitioners object to three of those designations, disagreeing with EPA's analysis and reliance (or failure to rely) on certain modeling data. But these are technical issues, regarding which EPA is entitled to substantial deference. Petitioners' disagreements with EPA's judgments regarding the reliability of modeling and other data are insufficient grounds to overturn the challenged designations.

BACKGROUND

1. The Clean Air Act and the NAAQS program

The Clean Air Act ("CAA" or "Act"), 42 U.S.C. §§ 7401-7671q, establishes a joint state and federal program to address air pollution. Among other things, it directs EPA to establish air quality standards for certain pollutants that may reasonably be anticipated to endanger public health and welfare, 42 U.S.C. §§ 7408-09. These national ambient air quality standards, or NAAQS, specify the maximum permissible concentration of a pollutant in the ambient air. *Id.* § 7409. Primary NAAQS are

those that EPA determined are requisite to protect public health with an adequate margin of safety, whereas secondary NAAQS protect the public welfare from any known or anticipated adverse effects (on, e.g., soils, water, vegetation, or wildlife) associated with the presence of an air pollutant in the ambient air. *See* 42 U.S.C. § 7409(b); *see also* § 7602(h) (defining "welfare").

Once it promulgates a NAAQS, EPA must designate all areas of the country as "attainment," "nonattainment," or "unclassifiable" for that NAAQS. 42 U.S.C. § 7407(d)(1). Nonattainment areas violate the NAAQS or contribute to NAAQS violations in a nearby area; attainment areas meet the NAAQS; and unclassifiable areas are those which EPA cannot classify on the basis of "available information" as meeting or not meeting the NAAQS. *Id.* § 7407(d)(1)(A)(i)-(iii).

Once EPA promulgates a NAAQS, states have three years to adopt state implementation plans ("SIPs") to implement, maintain, and enforce that NAAQS. 42 U.S.C. § 7410(a). For areas that EPA designates as nonattainment, states must also submit SIPs that include measures to provide for attainment of the NAAQS "as expeditiously as practicable, but no later than 5 years from the date [of the nonattainment designation]," including measures to reduce emissions of relevant pollutants. *Id.* §§ 7502(a)(2), 7502(c), 7514-14a.

2. The 2010 SO_2 NAAQS

Among other pollutants, EPA has promulgated NAAQS for sulfur dioxide, or SO_2, a gas emitted by electric utilities and other industrial facilities through the

combustion of fossil fuel. *See* 75 Fed. Reg. 35,520, 35,524 (June 22, 2010). Short-term exposures to SO_2 are linked to "an array of adverse respiratory effects including bronchoconstriction and increased asthma symptoms." 81 Fed. Reg. at 45,041. Studies have shown "a connection between short-term exposure and increased visits to emergency departments and hospital admissions for respiratory illnesses, particularly in at-risk populations including children, the elderly and asthmatics." *Id.*

EPA first promulgated a primary NAAQS for SO_2 in 1971.[1] 36 Fed. Reg. 8186 (Apr. 30, 1971). Over the following decades, EPA considered revising the SO_2 NAAQS, *see* 75 Fed. Reg. at 35,522, but in 1996 the Agency decided not to do so. *See* 61 Fed. Reg. 25,566 (May 22, 1996). The American Lung Association challenged that decision, and this Court concluded that EPA had not adequately explained its determination that no revision to the SO_2 NAAQS was appropriate and remanded the rule to the Agency. *Am. Lung Ass'n v. EPA*, 134 F.3d 388 (D.C. Cir. 1998). In response, EPA collected and analyzed additional air quality data, and in 2006 the Agency initiated a review of the SO_2 primary NAAQS. *See* 75 Fed. Reg. at 35,523.

On June 22, 2010, EPA promulgated a final rule revising the SO_2 primary NAAQS. 75 Fed. Reg. 35,520. The new 1-hour standard[2] was set at 75 parts per

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[1] EPA has also promulgated a secondary NAAQS for SO_2, but this case concerns only the primary SO_2 NAAQS promulgated in 2010.

[2] EPA had previously issued 24-hour and annual standards; in the 2010 rulemaking, EPA issued a new short-term (1-hour) standard to address health effects associated with short-term SO_2 exposures. *See* 75 Fed. Reg. at 35,523-27.

billion (ppb), based on the three-year average of the annual 99th percentile (i.e., the annual fourth-highest) one-hour daily maximum concentration. *Id.* at 35,539-41. EPA then began the process of designating all areas of the country as either attainment, nonattainment, or unclassifiable in regard to the revised standard.

3. The SO_2 designations process

CAA section 107(d) describes the designations process. 42 U.S.C. § 7407(d). States must submit their recommended designations for all areas within their borders within a year of the promulgation of a new or revised NAAQS. *Id.* § 7407(d)(1)(A). EPA must notify states of any proposed modifications to those recommended designations at least 120 days before promulgation of a final designation. *Id.* § 7407(d)(1)(B)(ii). EPA is not required to provide public notice or an opportunity for comments during the designations process, although it may elect to do so. *See id.* § 7407(d)(2)(B). Ultimately, the Act requires the Agency to promulgate designations within two years of the issuance of a NAAQS, although EPA may extend that period for an additional year in certain circumstances. 42 U.S.C. § 7407(d)(1)(B)(i).

Congress has not specified the type, quality, or quantity of "available information" required for EPA to determine an area is meeting or not meeting a NAAQS under section 7407(d)(1). Congress did, however, direct EPA to establish an air quality monitoring system to collect data to be used in conjunction with SIPs, *see* 42 U.S.C. § 7619(a), and EPA reasonably determined that the regulations

implementing that direction should also apply to monitoring data relied on for area designations. These monitoring regulations are set forth in 40 C.F.R. pt. 58.

While EPA has typically relied on monitoring data when characterizing air quality for most NAAQS pollutants, EPA has also consistently interpreted 42 U.S.C. § 7407(d)(1) to allow the use of modeling analyses to characterize air quality in regard to the SO_2 NAAQS, including where monitors do not adequately characterize peak concentrations in an area.[3] EPA's regulations addressing air quality models are found in 40 C.F.R. pt. 51, Appendix W ("Guideline on Air Quality Models"). Among other things, Appendix W provides information about how to formulate models, including AERMOD (American Meteorological Society/EPA Regulatory Model), the Agency's preferred near-field dispersion modeling system, and how to use such models to estimate ambient concentrations of air pollutants. *See* 40 C.F.R. pt. 51, App. W § 4.2.

EPA has also provided guidance addressing the collection of air quality data for SO_2 NAAQS designations processes. On March 24, 2011, EPA issued guidance to assist states with their 2010 SO_2 NAAQS designations submissions, discussing the use of both monitoring data and modeling analyses when characterizing air quality in regard to the 2010 SO_2 NAAQS. *See* 81 Fed. Reg. at 45,043. EPA updated its designations guidance in a March 2015 memorandum (the "Page Memo"), identifying

[3] *See* 43 Fed. Reg. 8962 (Mar. 3, 1978) (final designations for the 1971 SO_2 NAAQS); 43 Fed. Reg. 40,502 (Sept. 12, 1978) ("the EPA's policy related to designations for SO_2 permit the use of either modeling or monitoring to determine attainment status").

factors that the Agency would evaluate in determining whether areas are in violation of the 2010 SO_2 NAAQS, including modeling analyses and monitoring data.[4]

EPA supplemented that guidance with two non-binding technical assistance documents, the SO_2 NAAQS Designations Modeling Technical Assistance Document ("Modeling TAD") and SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document ("Monitoring TAD"), in order to assist states and other parties in characterizing air quality through air dispersion modeling or ambient air quality monitoring.[5] The Modeling TAD points states and other stakeholders to Appendix W as the primary source of information regarding the formulation and use of models, but explains that, for the purpose of SO_2 designations, modeling analyses should be based on existing air quality rather than emission limits indicating future attainment. *See* Modeling TAD at 3-4 (JA XX). Accordingly, the Modeling TAD recommends, *inter alia*, that when modeling air quality based on plume dispersion from SO_2 sources, parties should use the most recent three years of actual emissions from those sources as well as the most recent three years of meteorological data, as that approach simulates whether a monitor would have demonstrated attainment of the 2010 SO_2 NAAQS. Modeling TAD at 4, 9-10 (JA X, XX-XX). The Modeling

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[4] *See* EPA-HQ-OAR-2014-0464-0030, Memorandum from Stephen D. Page, Director of EPA's Office of Air Quality Planning and Standards ("Page Memo") (JA XX-XX).

[5] *See* EPA-HQ-OAR-2014-0464-0203 (Feb. 2016 Modeling TAD) (JA XX-XX) and EPA-HQ-OAR-2014-0464-0204 (Feb. 2016 Monitoring TAD) (JA XX-XX).

TAD and the Page memo also identify the circumstances in which EPA considers it appropriate to use sources' allowable emissions (instead of actual emissions). *Id.* at 10 & 21 (JA XX); Page Memo at Attachment 2 at 2 (JA XX) ("[w]e would also consider any additional information we receive on federally-enforceable emissions controls . . . which will require compliance before final designations are issued").

In 2015, EPA promulgated a final rule requiring states to provide air quality assessments for areas with sources of SO_2 that emitted at least 2,000 tons per year (tpy) or were listed by EPA or a state or local agency. Data Requirements Rule for the 2010 1-Hour [SO_2 NAAQS], 80 Fed. Reg. 51,052 (Aug. 21, 2015) ("Data Rule"). The Data Rule set up a process and timetable for states' submission of air quality assessments, which could be based on either monitoring data or modeling analyses. *Id.* at 51,054. In lieu of those air quality assessment requirements, states could instead opt to impose federally enforceable and in-effect emission limits that would keep sources' emissions under 2,000 tpy, or document the shutdown of the source, by a specified deadline. *Id.* EPA explained that such information "may be used by the EPA in future actions to evaluate areas' air quality under [the SO_2 NAAQS], including area designations and redesignations, as appropriate." *Id.* at 51,052.

4. EPA's first two rounds of 2010 SO_2 NAAQS designations

EPA issued its first round of designations for the 2010 1-hr SO_2 NAAQS in

2013,[6] addressing 29 areas that, "based on recorded air quality monitoring data showing violations of the NAAQS, do not meet the 2010 SO_2 NAAQS" or that "contribute to SO_2 air pollution in a nearby area that does not meet the SO_2 NAAQS." 78 Fed. Reg. 47,191 (Aug. 5, 2013) (the "Round 1 Rule"). Industry petitioners challenged two of those area designations, but this Court upheld as reasonable EPA's determination that the areas were in nonattainment. *Treasure State Res. Indus. Ass'n v. EPA*, 805 F.3d 300 (D.C. Cir. 2015).

EPA explained in the Round 1 Rule that, because it was not yet prepared to issue designations for the remainder of the country due to a lack of data, it would address all other areas "in separate future actions." 78 Fed. Reg. at 47,191. After being sued by environmental groups, the Agency negotiated a consent decree setting a schedule for the remaining designations, which was entered by the district court in 2015 and upheld by the Ninth Circuit last year.[7]

In July 2016, EPA issued the Round 2 Rule, which contained a portion of the Agency's second round of designations for the 2010 SO_2 NAAQS. 81 Fed. Reg. 45,039. EPA addressed 61 areas in 24 states, designating 4 areas as nonattainment, 16

[6] As permitted by the Act, *see* 42 U.S.C. § 7407(d)(1)(B)(i), EPA had extended its designations deadline by a year. 77 Fed. Reg. 46,295 (Aug. 3, 2012).

[7] *See* Consent Decree, Sierra Club and Natural Resources Defense Council v. McCarthy, No. 3:13-cv-3953-SI, Doc. #163 (N.D. Cal., entered Mar. 2, 2015); *Sierra Club v. North Dakota*, 868 F.3d 1062 (9th Cir. 2017) (upholding Consent Decree).

areas as unclassifiable, and 41 areas as "unclassifiable/attainment,"[8] and provided the basis for its decisions in, inter alia, a response to comment document[9] ("RTC") and technical support documents ("TSDs"). *Id.* at 45,040-41, 45,044. Only a handful of those designations have been challenged.

In these consolidated cases, Petitioners Samuel Masias et al. (the "Masias Petitioners") challenge EPA's designation of the Colorado Springs, Colorado, area as unclassifiable instead of nonattainment; Petitioner Sierra Club challenges EPA's designation of Gallia County, Ohio, as unclassifiable instead of nonattainment; and Petitioner the Board challenges EPA's designation of Wyandotte County, Kansas, as unclassifiable instead of unclassifiable/attainment. Challenges to two other area designations were held in abeyance after EPA indicated its intent to revisit those designations. Doc. #1702751. Finally, petitions challenging four Texas area designations promulgated in a Supplement to the Round 2 Rule, 81 Fed. Reg. 89,870 (Dec. 13, 2016), are before the 5th Circuit, but have also been held in abeyance pending EPA administrative action. *See* Dkt. No. 17-60088 (5th Cir.).

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[8] As in prior rulemakings, in the Round 2 Rule EPA used the term "unclassifiable/attainment," rather than "attainment," for areas where air quality data demonstrated attainment or where EPA had reason to believe areas were likely in attainment and do not contribute to nearby violations. *See* 81 Fed. Reg. at 45,041 n.3; Page Memo, Attachment 2 at 1 (JA XX) ("While states have and may continue to submit designations recommendations identifying areas as 'attainment,' the EPA expects to continue its traditional approach . . . of using a designation category of 'unclassifiable/attainment' for areas that EPA determines to meet the NAAQS.").

[9] EPA-HQ-OAR-2014-0464-0389 (JA XX-XX).

SUMMARY OF ARGUMENT

The Colorado Springs area designation

EPA's designation of the Colorado Springs area as unclassifiable, rather than nonattainment, was reasonable. Petitioners suggest that modeling submitted by certain commenters supported a nonattainment designation, but EPA reasonably concluded that the meteorological data incorporated into that modeling is not representative of the Colorado Springs area and therefore did not provide a sufficient basis to designate that area as being in attainment or nonattainment. Specifically, information submitted by the State as well as recent on-site meteorological data from the major SO_2 source in the area, the Martin Drake Power Plant, indicated that there are meaningful differences between wind patterns at, and the terrain surrounding, the Drake plant and the Colorado Springs Airport meteorological station. An unclassifiable designation is reasonable based on this mismatch.

Furthermore, Petitioners' argument that EPA treated Colorado Springs differently than four areas designated as nonattainment in the Round 2 Rule fails at the outset because Petitioners did not raise that argument in comments and thereby waived it. In any event, EPA did not apply a different standard to Colorado Springs. Rather, there were critical differences between the meteorological data supporting EPA's nonattainment designations for the other four areas and the Colorado Springs Airport meteorological data, and EPA reasonably concluded that the latter was not representative of the area based on facts and data specific to that area.

The Gallia County area designation

EPA reasonably designated the Gallia County, Ohio, area as unclassifiable after concluding that the State's 2016 modeling understated background concentrations, but overstated recent actual emissions from the relevant SO_2 sources. The Sierra Club argues that EPA could easily have fixed the State's modeling by using "basic arithmetic" to eliminate the improper reduction to background concentrations. But Sierra Club distorts and oversimplifies this technical issue: EPA could not simply subtract one background concentration value from the State's design value and add in another to fix the modeling. Rather, because the State used variable background concentrations, EPA would have had to recalculate hourly SO_2 concentrations at thousands of locations in the area over a three-year period. Moreover, EPA had an additional concern regarding the modeling; specifically, that the most recent three years of actual emissions from sources in the Gallia County area were lower than those used by the State in its model. With one flaw in the State's modeling pointing towards one outcome and another pointing towards the opposite outcome, EPA reasonable concluded that the "available information" did not show whether the area had attained, or not attained, the NAAQS and designated it as unclassifiable. 42 U.S.C. § 7407(d)(1)(A)(iii).

The Wyandotte County area designation

Petitioner Kansas City Board of Public Utilities ("the Board") lacks standing to challenge EPA's designation of the Wyandotte County, Kansas, area as unclassifiable

rather than unclassifiable/attainment. Those designations are functionally equivalent under the Act and EPA's regulations. In either case, the Board would not have to impose additional control measures on its facility unless EPA took an additional, independent action from the one challenged here by either re-designating the area as nonattainment or finding the State's SIP inadequate. Thus, the Round 2 Rule did not injure the Board, and any hypothetical injury would not be redressed by an order remanding the designation to EPA for a potential change to unclassifiable/attainment.

Even if the Board had standing, its challenge to the Wyandotte County designation would fail because the information before the Agency in July 2016 did not support an unclassifiable/attainment designation. The Board argues that such a designation was appropriate based on modeling that relied on a new state emissions limit for the nearby Veolia facility. But, consistent with EPA's guidance as well as this Court's decision in *Catawba County, N.C. v. EPA*, 571 F.3d 20, 43 (D.C. Cir. 2009), the Agency reasonably declined to rely on that limit given that it was not yet federally enforceable or in effect. EPA also reasonably declined to designate the area as unclassifiable/attainment based on reduced actual emissions from the Veolia plant, given that the Agency did not have information showing that those recent emission reductions had resulted in the Wyandotte County area attaining the NAAQS.

STANDARD OF REVIEW

EPA's Round 2 Rule and the area designations made therein are subject to judicial review under the Administrative Procedure Act ("APA"), which provides that

the Court may set aside EPA action found to be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A). Under the APA standard, agency actions are presumed valid if they "conform to certain minimal standards of rationality." *Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 520-21 (D.C. Cir. 1983) (internal quotation marks and citation omitted). Thus, the Court must affirm the designations challenged by Petitioners so long as EPA "examine[d] the relevant data and articulate[d] a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" *Milk Indus. Found. v. Glickman*, 132 F.3d 1467, 1476 (D.C. Cir. 1998) (quoting *Motor Vehicle Mfrs. Ass'n of U.S. v. State Farm Mut. Auto. Ins. Colo.*, 463 U.S. 29, 43 (1983)).

Deference is especially appropriate when an agency acts "under unwieldy and science-driven statutory schemes like the Clean Air Act." *Bluewater Network v. EPA*, 372 F.3d 404, 410 (D.C. Cir. 2004) (internal quotation marks and citation omitted). And in assessing whether EPA has satisfactorily explained its actions, the Court must give an "extreme degree of deference to the agency when it is evaluating scientific data within its technical expertise." *Am. Farm Bureau Fed'n v. EPA*, 559 F.3d 512, 519 (D.C. Cir. 2009) (quotation marks and citation omitted).

Challenges to EPA's statutory interpretations are governed by *Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 842-44 (1984). The Court first inquires whether Congress "has directly spoken to the precise question at issue," in which case the Court "give[s] effect to the unambiguously expressed intent of

Congress." *Id.* at 842-43. If the statute is "silent or ambiguous," the Court considers "whether [EPA's] answer is based on a permissible construction." *Id.* at 843. This Court has observed that 42 U.S.C. § 7407(d), describing the designations process and defining the potential classifications, is "replete with the kinds of words that suggest a congressional intent to leave unanswered questions to an agency's discretion and expertise." *Catawba Cty.*, 571 F.3d at 35; *see also Miss. Comm'n on Envtl. Quality v. EPA*, 790 F.3d 138, 154 (D.C. Cir. 2015) ("The Act calls for the EPA to make designations 'on the basis of available information.' 42 U.S.C. § 7407(d)(1)(A)(iii). We have repeatedly found similar language to be ambiguous . . .").

ARGUMENT

I. The Colorado Springs area designation was reasonable.

In the Round 2 Rule, EPA designated the Colorado Springs, Colorado, area as unclassifiable. *See* 81 Fed. Reg. at 45,046. The Masias Petitioners challenge that designation, arguing that EPA should have designated the area as nonattainment based on certain modeling submitted to the Agency by commenters. But EPA reasonably concluded that meteorological data from the Colorado Springs Airport, on which that modeling was premised, was not representative of the area and that EPA accordingly could not determine whether the area was meeting or not meeting the 2010 SO_2 NAAQS after considering all available information.

A. EPA reasonably concluded that the Colorado Springs Airport data is not representative of the designated area.

The Colorado Springs Airport lies outside the Colorado Springs area.[10] Meteorological data from the airport could still have been used in determining whether the area had attained the standard—if that data were representative of the Colorado Springs area. But EPA reasonably concluded, based on all the information available to it, that the Colorado Springs Airport meteorological data is not representative of the Colorado Springs area, and so modeling based on that data should not form the basis for designating that area as nonattainment.

Because there was a large source of SO_2 in the Colorado Springs area—the Martin Drake Power Plant ("Drake")—EPA had an obligation to designate that area by July 2016.[11] Accordingly, in September of 2015, the State of Colorado recommended that the Colorado Springs area be designated as unclassifiable based on "an assessment and characterization of air quality from the [Drake] facility and other

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[10] While so labelled for convenience, the Colorado Springs area includes only part of Colorado Springs, plus certain other parts of El Paso County. 81 Fed. Reg. at 45,046.

[11] *See Sierra Club et al v. EPA*, No. 3:13-cv-3953-SI, Doc. #163 at 4, ¶ 1 (N.D. Cal., Mar. 2, 2015). Petitioner incorrectly asserts that, by identifying areas containing an SO_2 source of a certain size (such as the Colorado Springs area) for designation by July 2, 2016, the Consent Decree implied that those areas should be classified nonattainment. *See* Masias Br. at 4 (the Consent Decree "bode towards a nonattainment designation"). But the Consent Decree did nothing more than set a schedule for EPA to designate the remaining areas of the country in a particular order based on certain criteria; it cannot fairly be said to substantively counsel for or against any particular designation outcome for any particular area. *See id.* at 6, ¶ 7.

nearby sources," including modeling. Colo. Final TSD[12] at 5-6 (JA XX-XX).[13] In making this recommendation, Colorado carefully considered whether, based on EPA's guidance on the subject, the meteorological data sets submitted by various stakeholders were representative of the transport and dispersion of emissions from the Drake plant, and had concluded that they were not. [14]

EPA notified Colorado in early 2016 that the Agency intended to adopt the State's recommended designation based on EPA's own assessment of all available information. *See* 81 Fed. Reg. 10,563 (Mar. 1, 2016). EPA had extensively analyzed the information submitted by the State and interested stakeholders, which included modeling that relied on Colorado Springs Airport meteorological data and purported to show violations of the NAAQS. Colo. Preliminary TSD[15] at 7-13 (JA XX-XX). After publishing its response to the State's recommendation and inviting public comment,[16] EPA received comments on its intended unclassifiable designation from many parties, some of whom submitted additional modeling that they claimed showed violation of the NAAQS. Colo. Final TSD at 7-8 (JA XX).

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[12] EPA-HQ-OAR-2014-0464-0393.

[13] *See also* EPA-HQ-OAR-2014-0464-0037 (Colo. Sept. 2015 submission), Attachment at 8-15 (JA XX-XX).

[14] *See id.*, Attachment at 11-12 (JA XX-XX); EPA-HQ-OAR-2014-0464-0044 (Colo. Sept. 2015 Meteorological Determination) at 1-5 (JA XX-XX).

[15] EPA-HQ-OAR-2014-0464-0154.

[16] *See* 81 Fed. Reg. at 10,563-64.

EPA analyzed that modeling extensively, concurring with some of the parameters used but disagreeing with others. *See* Colo. Final TSD at 7-35 (JA XX-XX); RTC at 20-32 (JA XX-XX). In its final Technical Support Document, EPA identified the many concerns it had about each of the modeling analyses. For example, EPA explained that several of the models assumed a population density near the Drake plant that was inconsistent with census data. *See* Colo. Final TSD at 24, 27-28, 30 & 32 (JA XX, XX-XX, XX & XX). One modeling analysis was based on emissions data from an earlier three-year period, 2011-2013, which was "much higher than the most recent three years of SO_2 data from the [Drake] facility." *Id.* at 24 (JA XX). Another was based on 2011 emissions data, the highest in recent years. *Id.* at 27 (JA XX). But the primary concern articulated by the Agency—common to all of the modeling analyses submitted by commenters favoring a nonattainment designation for the area—was that the modeling relied on unrepresentative meteorological data. *See* Colo. Final TSD at 23, 27, 30-32, & 34 (JA XX, XX, XX, XX & XX).

EPA has explained that the meteorological data used in a modeling analysis should be representative of the area, as the representativeness of such data can be critical to accurately predicting SO_2 concentrations. *See* Modeling TAD § 7.2 at 26 (JA XX); RTC at 26-28 (JA XX-XX). The predicted pollutant concentrations at any given location (receptor) in the modeled area result from a combination of data used in the modeling to simulate dispersion, including meteorological conditions like wind speed,

wind direction, temperature, and cloud cover.[17] Therefore, the reliability of the modeling is often dependent upon the representativeness of the meteorological information used to construct the model. When determining whether meteorological data is representative of the modeled area, EPA considers factors including (but not limited to) the proximity of the meteorological station to the area; the surrounding terrain; and the period of time during which data are collected. *See* Modeling TAD § 7.2 at 26 (JA XX); 40 C.F.R. Pt. 51, App. W § 8.4.

Considering those factors, EPA reasonably concluded that the modeling submitted by certain commenters in support of a nonattainment designation for the Colorado Springs area did not use representative meteorological data. Colo. Final TSD at 13-19 (JA XX-XX); RTC at 22-22 (JA XX-XX). One commenter had used meteorological data from various locations around the country, attempting to show that the area was nonattainment regardless of which meteorological data was used,[18]

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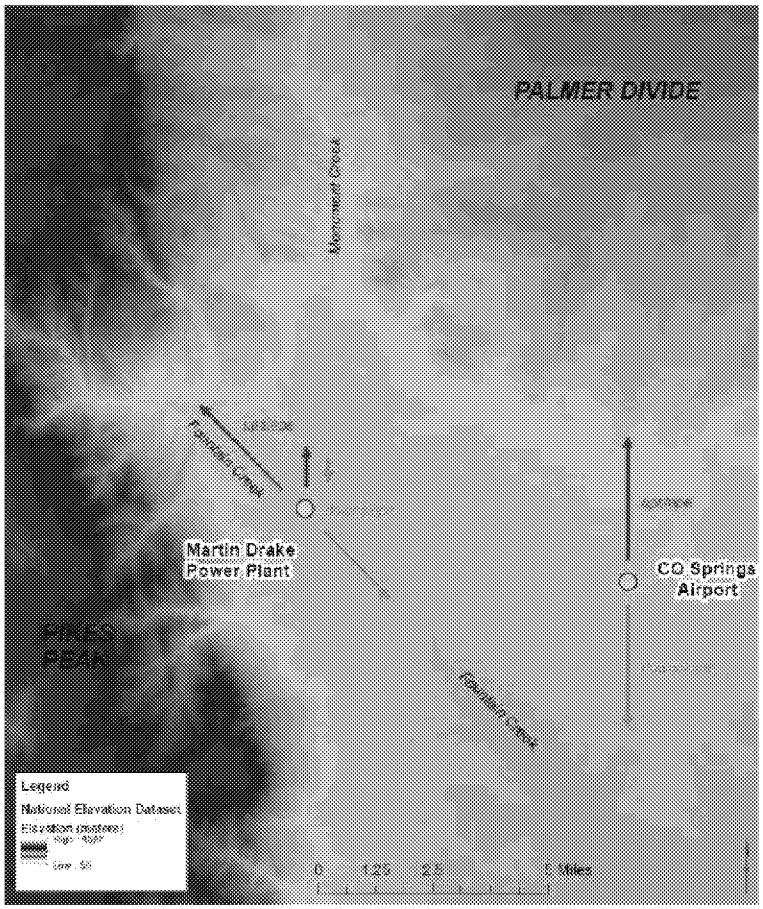
[17] *See* 40 C.F.R. Part 51, App. W. § 8.4.

[18] In response, EPA explained, inter alia, that the resulting data showed that SO_2 concentrations varied significantly (by up to a factor of two) based on which meteorological data set was used, and that EPA therefore could not conclude that the area could be assumed to be violating regardless of the meteorological data used. Colo. Final TSD at 19 & 30 (JA XX, XX); RTC at 28 (JA XX); *see also* Colo. Final TSD at 17, 19 & 25-28 (JA XX, XX, & XX-XX) (identifying other issues with this modeling approach). Despite Petitioners' arguments to the contrary, *see* Masias Br. at 12, EPA thus did analyze and explain why the meteorological data inputs materially affected the modeling results, and that representative meteorological data was needed to base a determination of whether the area was meeting or not meeting the NAAQS.

but that data was not representative of the Colorado Springs area and thus could not form the basis for a nonattainment designation. *See* RTC at 28-30 (JA XX-XX).

The remaining modeling submitted by commenters favoring a nonattainment designation for the Drake plant area incorporated the Colorado Springs Airport meteorological data. EPA explained, however, that the information before it indicated that wind patterns were substantially different at the airport as compared to the area around the Drake plant. Colo. Final TSD at 15-16 (JA XX-XX); RTC at 21 (JA XX). Specifically, winds at the airport "are driven by the higher terrain to the north of the airport," making wind directions at the airport predominantly northerly and southerly, whereas winds at the Drake plant mostly flow northwest and southeast, following the Fountain Creek Valley (especially during certain conditions when the highest impacts from the Drake plant are expected to occur), as shown here:



Colo. Final TSD at 15-16, Figure 4 (JA XX-XX). EPA also noted wind speeds at the airport were generally higher than at the Drake plant. *Id.* at 17 (JA XX). Moreover, information submitted by the State showed that there were significant differences in the terrain surrounding the Drake plant as compared to the terrain surrounding the Colorado Springs airport, which would result in different wind patterns. As shown above, the Drake plant is quite close to the Rocky Mountains to the west, and it is also close to urban development; in contrast, there is lesser-elevated terrain further to the

north of the airport and no urban development in the immediate vicinity. *Id.* at 16, 20, 30 & 31 (JA XX, XX, XX & XX); RTC at 27 (JA XX).[19]

The Agency explained that the foregoing differences in terrain, wind patterns, and wind speeds would "significantly impact the transport and dispersion conditions of [SO_2] plumes." RTC at 21 (JA XX). In other words, SO_2 plumes would move differently around the Airport than around the Drake plant. Therefore, like the State, EPA concluded that meteorological data from the Colorado Springs Airport was not representative of the Colorado Springs area and accordingly did not provide an appropriate basis to designate the area as attainment or nonattainment. Colo. Final TSD at 17, 19 (JA XX, XX).

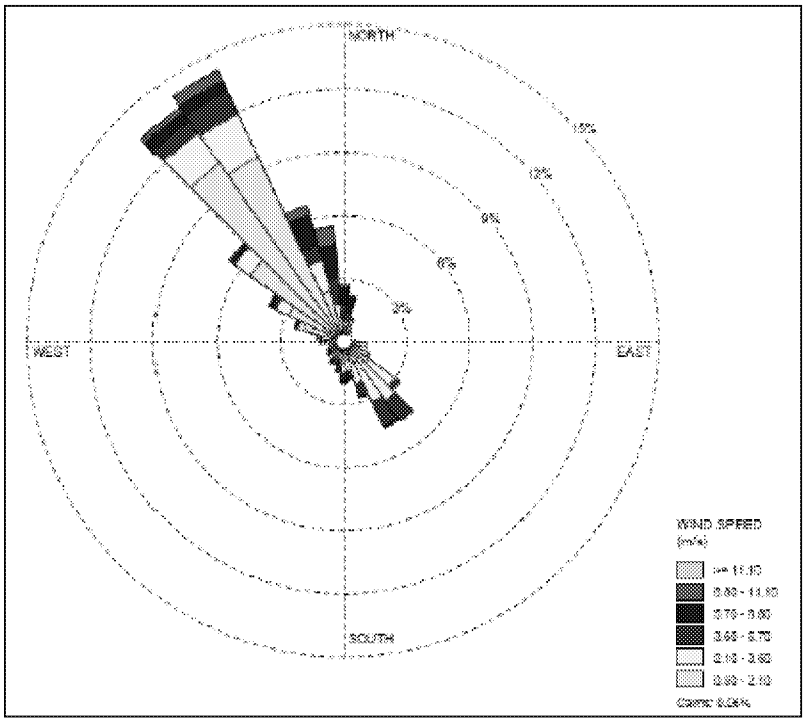
The Masias Petitioners try to undermine EPA's analysis of and reliance on the information provided by the State (rather than on the flawed modeling submitted by commenters) by arguing that, in 2011, the State conceded "wind speed and direction at the two locations would be 'similar.'" Masias Br. at 2, 3 & 22 (citing AR-0048,

[19] The Masias Petitioners argue that the terrain between the Drake facility and the airport is "relatively flat." E.g., Masias Br. at 7. But while there are no significant terrain features obstructing the area between Drake and the airport, the two sites have different elevations, surface characteristics, and significant terrain features in other directions. For example, the highest elevation increase near the airport is roughly 600 feet, peaking approximately ten kilometers to the northeast; in contrast, five kilometers west of the Martin Drake Power Plant, the elevation has already increased approximately 2,000 feet, and increases to 4,000 feet at approximately 9 kilometers distance. Colo. Final TSD at 16 n.4 (JA XX). These differences in terrain impact the representativeness of the meteorology for this area.

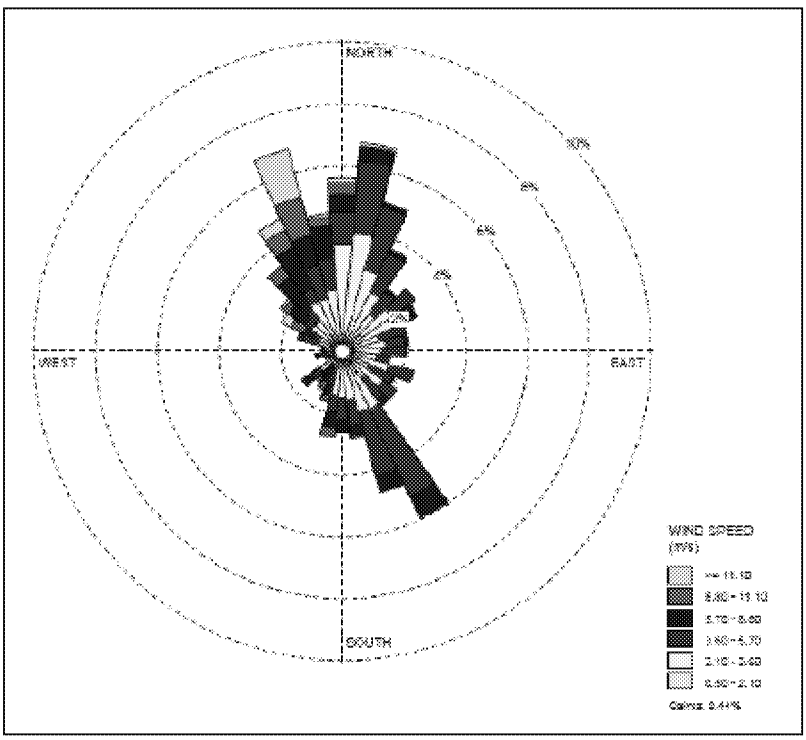
Attachment C (JA XX)). But in the document cited by Petitioners, the State in fact concluded that, despite potential similarities in wind direction, the airport data is not representative. *See* AR-0048, Attachment C (JA XX). The State explained that other factors, such as the frequency of sunshine and cloud types, matter when determining whether meteorological data is representative of an area. *Id.* Thus, Colorado's 2011 statement is not at odds with its 2015 recommendation that EPA designate the Colorado Springs area as unclassifiable.

Furthermore, the most recent information available to EPA when it designated the Colorado Springs area—specifically, three months of meteorological data from a tower erected at the Drake facility by the State in 2015 to address the lack of representative meteorological data and inform future modeling—indicated that wind directions and speeds at the Colorado Springs Airport differ significantly from those at the Drake plant site. Colo. Final TSD at 17 (JA XX); RTC at 27 (JA XX). These differences are evident from a comparison of the following figures (known as wind roses) showing the on-site data and airport data for the same period:

Meteorological Wind Speed Data collected from the tower located at the Martin Drake Power Plant between October 18, 2015 and December 31, 2015.



Meteorological Wind Speed Data collected from the Colorado Springs Airport between October 18, 2015 and December 31, 2015.



Colo. Final TSD at 16-17, Figures 5 & 6 (JA XX-XX).[20]

As shown above, the dominant wind direction recorded on-site at Drake was from the north-west, while the dominant wind directions recorded at the airport were generally from the north and south. *See also* Colo. Final TSD at 17 (JA XX) ("the [on-site tower] is generally measuring slower wind speeds from the north-west, while the airport is generally measuring higher wind speeds from two dominant directions (i.e., the north and south))." EPA explained that these "differences in meteorological conditions among the [Drake data] and airport meteorological data sets are likely to be even more evident during other times of the year. For instance, the terrain features near the Martin Drake Power Plant will most likely generate more variable wind patterns during the summer." *Id.* at 19 (JA XX).

Thus, although on-site data was only available for a short period, that data appeared to "confirm the EPA's conclusion that there are significant differences between the meteorological data collected at the Colorado Springs Airport and that collected at the Martin Drake Power Plant." Colo. Final TSD at 19 (JA XX). EPA's conclusion (*see* RTC at 27-28) that the Colorado Springs Airport meteorological data was not representative of the Drake plant area, that modeling using such data thus did

[20] Petitioners point to comments comparing meteorological data from the Airport to data from weather and monitoring stations west of the Drake plant. *See* Masias Br. at 7-8. But those commenters did not address whether either of the stations to the West of the Drake plant were representative of conditions at the plant—which the on-site meteorological station indicates are in fact significantly different.

not reliably characterize air quality in the Colorado Springs area, and that the Agency therefore could not determine whether that area had attained the SO_2 NAAQS based on the available information was therefore a rational one. *See Miss. Comm'n*, 790 F.3d at 154-55 (there is "no obligation for the agency to base its designations on data it reasonably considers to be unsound, at least if it 'adequately explain[s] its reasons for rejecting . . . [the] data' on which it declines to rely") (quoting *City of Waukesha v. EPA*, 320 F.3d 228, 248 (D.C. Cir. 2003)); *Connecticut v. EPA*, 696 F.2d 147, 159-60 (2d Cir. 1982) ("there can be no doubt that [EPA's] considered weighing of competing factors [relevant to meteorological data] produced a decision which was rationally based").

B. EPA's designation of other areas as nonattainment does not show that its designation of the Colorado Springs area as unclassifiable was arbitrary or capricious.

The Masias Petitioners argue that EPA's refusal to credit models relying on the Colorado Springs Airport meteorological data is unreasonable given that the Agency designated four other areas (the Anne Arundel and Baltimore County ("Maryland") area; the Alton Township, Illinois, area; the Williamson County, Illinois, area; and the St. Clair, Michigan, area) as nonattainment based on data from airport meteorological stations that were further away and (Petitioners argue) less representative of the designated areas. *See* Masias Br. at 14-18, 20-25. Indeed, this is the sole basis for Petitioners' challenge to the Colorado Springs area designation. *See id.* at 22 ("Colorado Springs Residents' argument is not that EPA's decision is per se arbitrary. Rather, their argument is that EPA used a different standard for judging

representativeness of meteorological data for Colorado Springs versus the four areas which EPA designated nonattainment.").

To begin with, Petitioners have forfeited this argument by failing to raise it during the rulemaking process. Although EPA is not required by the APA or CAA to publish proposed section 7407(d) designations for notice and comment, EPA did so here. Petitioners should have raised any concerns regarding the allegedly disparate treatment of the Colorado Springs area during that process. *See Nat'l Ass'n of Clean Air Agencies v. EPA*, 489 F.3d 1221, 1231 (D.C. Cir. 2007) ("[i]t is a hard and fast rule of administrative law, rooted in simple fairness, that issues not raised before an agency are waived and will not be considered by a court on review.") (internal quotation marks and citation omitted); *Nuclear Energy Inst., Inc. v. EPA,* 373 F.3d 1251, 1290 (D.C. Cir. 2004) (per curiam) ("To preserve a legal or factual argument . . . [a] proponent [must] have given the agency a 'fair opportunity' to entertain it in the administrative forum before raising it in the judicial one.").[21] Petitioners certainly could have done so. EPA's analysis supporting its intended nonattainment designations for the four areas referenced by Petitioners addressed what

[21] *Cf. United States v. L.A. Tucker Truck Lines, Inc.,* 344 U.S. 33, 37 (1952) ("Simple fairness to those who are engaged in the tasks of administration . . . requires as a general rule that courts should not topple over administrative decisions unless the administrative body not only has erred but has erred against objection made at the time appropriate under its practice").

meteorological data EPA considered representative and why,[22] while EPA's analysis supporting its intended unclassifiable designation for the Colorado Springs area explained why EPA considered the Colorado Springs Airport data unrepresentative.[23] By failing to air their concerns regarding the alleged different treatment of those data sets in their comments on the intended designations, Petitioners waived that line of argument. *See Military Toxics Project v. EPA*, 146 F.3d 948, 956 (D.C. Cir. 1998) (Petitioner waived argument by failing to raise it in comments during rulemaking).

In any event, there are critical differences between the Colorado Springs Airport meteorological data and the meteorological data supporting EPA's nonattainment designations for the four areas referenced by Petitioners. To begin with, whereas the State concluded that the Colorado Springs Airport data was not representative of the area and submitted a lengthy analysis to EPA explaining why,[24] neither the relevant state nor any other stakeholder suggested that the meteorological data EPA relied on in designating the Alton Township, Williamson County, or Maryland areas was unrepresentative. Thus, unlike for the Colorado Springs area,

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[22] *See* EPA-HQ-OAR-2014-0464-0132 (Mich. Preliminary TSD) at 11 (JA XX); EPA-HQ-OAR-2014-0464-0116 (Md. Preliminary TSD) at 37, 40 (JA XX, XX); EPA-HQ-OAR-2014-0464-0128 (Ill. Preliminary TSD) at 13, 16 (Alton Township) and 66 (Williamson County) (JA XX, XX & XX).

[23] *See* Colo. Preliminary TSD at 9-11 (JA XX-XX).

[24] *See* Masias Br. at 3-4 (detailing exchange between EPA and Colorado).

EPA did not have any analyses suggesting that the meteorological data before the Agency was unrepresentative when it designated those other areas as nonattainment.

In regard to the St. Clair, Michigan, area, EPA did consider arguments that data from the Belle River meteorological station was as representative, if not more representative, than meteorological data from the Pontiac station, but concluded that the Belle River station did not have as complete a data set, and thus the data from the Pontiac station was better.[25] But this was a very different scenario from that in Colorado Springs. For the St. Clair area, EPA had two sets of representative meteorological data and only had to determine which was more representative, whereas for the Colorado Springs area, EPA had only one set of potentially representative meteorological data, which the State persuasively argued (and EPA's own analysis confirmed) was not, in fact, representative.

Furthermore, EPA consistently evaluated all of the information available to it for each of the four areas referenced by Petitioners as well as the Colorado Springs area, applying the factors identified in the Agency's guidance on meteorological data to each unique data set.[26] For example, EPA considered the terrain in each area; but unlike the Drake plant area, the four areas designated as nonattainment do not have

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[25] EPA-HQ-OAR-2014-0464-0404 (Mich. Final TSD) at 7-8 (JA XX-XX).

[26] *See* Ill. Preliminary TSD at 13, 16 & 66 (JA XX, XX) (Alton Township & Williamson County); Mich. Preliminary TSD at 11-14 (JA XX-XX) (St. Clair); Md. Preliminary TSD at 37-40 (JA XX-XX); Colo. Preliminary TSD at 9-11 (JA XX-XX).

elevated terrain in the immediate vicinity—let alone terrain as steep as the Rocky Mountains.[27] And while EPA explained that the Drake area's unique terrain was likely to result in significantly different wind patterns than those observed at the Colorado Springs Airport, *see* Colo. Final TSD at 15-16 (JA XX-XX), the information before the Agency indicated that there were not such dramatic differences in terrain between the four nonattainment areas and their corresponding meteorological stations.[28] EPA also could not compare wind roses from the significant SO_2 sources in the other four areas to wind roses for the corresponding meteorological stations because, unlike at the Drake facility, on-site meteorological data was not available from the other facilities. Thus, in designating the Alton Township, Williamson County, Maryland, and St. Clair areas as nonattainment and the Colorado Springs area as unclassifiable, EPA did not treat like areas inconsistently; rather, EPA evaluated the information before it and designated different areas differently based on different data.

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[27] Petitioners point to the Maryland area, but while they are correct that there is elevated terrain seventeen kilometers north of the SO_2 source in that area, EPA noted that the terrain around that facility is relatively flat, as both the facility and BWI airport (which is to the west) lie in the Atlantic Coastal Plain. Md. Final TSD (EPA-HQ-OAR-2014-0464-0385) at 20 (JA XX); Md. Preliminary TSD at 16 (JA XX).

[28] For example, in regard to the St. Clair area, EPA considered that the plant and the meteorological station were 17 and 50 kilometers (respectively) from Lake St. Clair, and that there were not significant differences in the surrounding terrain. *See* Mich. Preliminary TSD at 11-12, Figure 3, and 14 (JA XX-XX, XX & XX). In regard to the Maryland area, the information before EPA indicated that, although the airport was 12 kilometers further inland, the terrain surrounding the airport and the plant was similar. Md. Preliminary TSD at 14, 16-17 (JA XX, XX-XX)

Petitioners cite *Catawba County v. EPA*, 571 F.3d at 51, for the proposition that inconsistent treatment of similar areas is arbitrary. While that proposition is generally true, it simply does not apply here. In *Catawba County*, this Court remanded a designation where EPA applied different tests to similar data sets from different EPA regions.[29] But here, as in *ATK Launch Systems, Inc. v. EPA*, 669 F.3d 330, 339 (D.C. Cir. 2012), EPA considered the same factors for each of the designated areas but determined that "significant topographical and meteorological differences between the [challenged area and the other referenced areas] make a direct one-to-one comparison of the data underlying the analyses inappropriate."[30] Therefore, EPA's designation of the Colorado Springs area as unclassifiable was not arbitrary or capricious, but rather based on a sound analysis of all of the modeling and other data before the Agency. Petitioners' challenge fails.

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[29] *See* 571 F.3d. at 51. However, in a different portion of the *Catawba County* opinion, the Court upheld designations resulting from EPA's application of a multi-factor test to different sets of facts. *Id.* at 46-49. That is exactly what the Agency did here.

[30] In *ATK Launch Systems*, the Court found that an alleged inconsistency was simply different verbiage, not a different standard. 669 F.3d at 339. Insofar as Petitioners argue that EPA acted inconsistently because it relied on the "best" or "most" representative meteorological data for the four nonattainment areas but did not do so for the Colorado Springs area, the same is true here; EPA used those terms as adjectives to describe data it had determined was representative using the same multi-factor test that the Agency used to determine that the Colorado Springs Airport data was not representative. Another part of *ATK Launch Systems* is also relevant: the Court's rejection of a challenge to EPA's decision not to change a designation based on changed airport meteorological data. *See id.* at 338-39. The Court should again defer to EPA's expert analysis of the meteorological data.

II. EPA reasonably designated the Gallia County area as unclassifiable in light of flaws in the modeling submitted by the State.

EPA designated the Gallia County area in Ohio as unclassifiable after reviewing conflicting air dispersion modeling for the area submitted by the State and Petitioner Sierra Club. EPA observed that, although Ohio's most recent (2016) modeling understated background concentrations and did not consider the impact of the most recent three years' decline in SO_2 emissions, Sierra Club's modeling overstated background concentrations and overestimated emissions from local SO_2 sources. RTC at 131-32 (JA XX-XX); Oh. Final TSD[31] at 10, 14, 17-21 (JA XX, XX, XX-XX). Faced with contrary indications from dueling models that each had serious flaws, EPA reasonably concluded that "[w]hile the area is clearly close to the standard, the available evidence is insufficient for the EPA to determine whether the area is meeting or not meeting the standard." RTC at 132 (JA XX).

Sierra Club does not challenge EPA's conclusions about Sierra Club's modeling, but rather argues that EPA should have designated the Gallia County area as nonattainment based on a hypothetical, adjusted version of the State's modeling. *See* Sierra Club Br. at 16-21. While acknowledging that the State's 2016 modeling was flawed because it wrongly applied a 38% across-the-board reduction to background concentrations,[32] Sierra Club argues that EPA could have used "basic arithmetic" to

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[31] EPA-HQ-OAR-2014-0464-0405.

[32] The State justified that reduction based on a comparison of modeled and monitored concentrations, but EPA explained that, at 13 kilometers from the local SO_2 sources,

fix that error, and that doing so plainly shows violation of the NAAQS. *Id.* at 16-19. Sierra Club claims that, by not making this correction, EPA unlawfully and arbitrarily failed to base its determination on the information available to it. *Id.* at 19-21 (citing 42 U.S.C. § 7407(d)(1)(A)(iii)). This argument fails because applying basic arithmetic to the available information would not, by itself, "fix" the State's 2016 modeling. Rather, EPA would have had to create thousands of new background concentration inputs and re-model to correct that error, and also account for the fact that the most recent three years of actual emissions from the relevant sources were lower than the actual emissions data used by the State.

In asserting that the agency could have fixed Ohio's modeling by "replac[ing] the 38% discounted [background concentration] value with the non-discounted value," Sierra Club Br. at 17-18, Petitioners misunderstand how a design value is calculated with a variable background concentration.[33] Because the background

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the monitor used was too far "removed from the expected location of peak concentrations" and does not "provide a reliable indication of how well the model is performing" in regard to background concentrations. Oh. Final TSD at 17 (JA XX).

[33] Sierra Club's argument also seems to ignore the form of the 2010 SO_2 NAAQS, under which a single hourly exceedance of 75 ppb does not constitute a violation of the standard. Rather, because the standard is based on a three-year average of the annual fourth highest one-hour daily maximum concentration, 75 Fed. Reg. 35,520, one modeled exceedance—which is all that Sierra Club says that its proposed fix shows (*see* Sierra Club Br. at 10)—does not a nonattainment area make. Rather, the modeling would have to show at least four such exceedances in one year, and fourth-highest daily maximums in the other two years that were high enough to lead to an average value that exceeded the 2010 SO_2 NAAQS.

concentration can change by the hour based on the time of day and season, eliminating the State's 38% adjustment to background levels would first require an hour-by-hour recalculation of total SO_2 concentrations at each of the 34,225 receptors in the model,[34] and then a new determination of the maximum predicted 3-year average of the 99th percentile of the daily maximum 1-hour concentrations. *See* Oh. Final TSD at 12, 18 (JA XX, XX). That exercise could result in different one-hour daily maximums, which in turn could result in a new design value, as the design value is calculated by identifying the 4th-highest daily one-hour maximum concentration for each year, and then averaging that over three years. *See* Oh. Final TSD at 18 (JA XX); 75 Fed. Reg. at 35,539-40. This is hardly "basic arithmetic," Sierra Club Br. at 16, and Sierra Club's proposed fix to the State's modeling entirely ignores all of these moving parts in the design value calculation.[35]

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[34] Modeling estimates emission impacts at discrete locations (receptors) within an area of analysis. For this area, receptors were placed in a grid of varying density out to 50 km from the source, with receptor density greatest near the source. *See* Oh. Final TSD at 12 (JA XX) (describing and depicting grid of receptor locations).

[35] An example may help illustrate why Sierra Club's Figure 1 calculation does not account for the complexity of the design value calculation process. Consider two hypothetical hours at a single receptor. The cumulative modeled concentration at the receptor without background concentration is 35 for Hour 1 and 30 for Hour 2, and the background concentration—with a 38% downward adjustment—is 2 for Hour 1 and 6 for Hour 2. Therefore, the total modeled concentration at the receptor is 37 for Hour 1 and 36 for Hour 2. Now, if one recalculates the background concentration for these two hours without the 38% reduction, the Hour 1 background input is now 3.22 and the Hour 2 background input is now 9.67, making the new total SO_2 concentration 38.2 for Hour 1 and 39.7 for Hour 2—meaning that Hour 2 is now higher than Hour 1. That recalculation could accordingly change the hour that

Furthermore, EPA's conclusion that it could not "fully determine on the basis of its review of the [2016] modeling demonstration submitted by Ohio whether the Gallia County area is showing attainment of the 1-hour primary NAAQS" was also based on the Agency's observation that Ohio had used 2012-2014 actual emissions from the relevant sources in its model, whereas 2013-2015 actual emissions from those sources were up to 6% lower. *See* Oh. Final TSD at 14, 18-19, 21 (JA XX, XX-XX, & XX).[36] In other words, even assuming Sierra Club's Figure 1 calculation regarding background concentration were correct, the most conservative adjusted hypothetical design value would have been just over the 2010 SO_2 NAAQS, and the State's use of (higher) 2012-2014 actual emissions in its model suggested that the State's calculated design value may overstate current air quality impacts. With different pieces of data pointing to different outcomes, it was reasonable for EPA to

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represents the daily maximum, and thus change the annual 4th highest daily maximum concentrations for any of the three years in the averaging period—leading to a different design value at each receptor that is not necessarily equal to the old highest design value, minus the lowest variable old background value, plus the lowest variable new background value.

[36] Sierra Club argues that "slight year-to-year variations in [actual] emissions levels are neither permanent nor enforceable." Sierra Club Br. at 20. But while that is true, EPA guidance explains that air quality modeling is intended to act as a surrogate for monitors—i.e., as an alternate way to identify the impacts of actual, quantified emissions from specific SO_2 sources—and recommends the use of the most recent three years of actual emissions in constructing the model (*see* Modeling TAD at 3 (JA XX)), so it was hardly unreasonable for the Agency to take into account a known decrease in actual emissions within the most recent three-year period when considering the modeling data submitted by Ohio.

determine that the "available information" (42 U.S.C. § 7407(d)(1)(A)(iii)) was not sufficient for the Agency to determine whether the area had attained the NAAQS.

Finally, Sierra Club is incorrect in asserting that "the higher potential background levels also identified by Ohio [in the state's 2015 modelling] . . . would have shown even greater exceedances of the NAAQS" because "[h]ad EPA applied Ohio's earlier non-variable background concentration . . . the resultant 38% adjustment would have indicated a NAAQS violation." Sierra Club Br. at 10 & 19. Sierra Club is cherry-picking data from two sets of State modeling analyses that were based on different facts and took different approaches, and is then combining that data to arrive at a "conclusion" about the likely air quality that has no logical basis. Sierra Club starts with the maximum SO_2 concentration from the State's 2016 modeling data (which included a variable background concentration, albeit an incorrect one); subtracts from that 2016 maximum the fixed background concentration from the State's 2015 modeling data; next makes an unsubstantiated 38% upward adjustment[37] to that fixed background concentration from the State's 2015 modeling data; and then adds that artificially adjusted background concentration to what remains of the maximum concentration from the State's 2016 modeling data

[37] As the State did not make a 38% downward adjustment to its 2015 background concentrations, *see* Sierra Club Br. at 7-8, there is no logical reason to make a "38% adjustment" to a calculation using that number.

to arrive at a new maximum concentration. This is not a "rational"[38] approach to determining whether an area has violated the NAAQS; by combining pieces of data from differently constructed sets, Petitioners are mixing apples and oranges.

In short, presented with modeling that was flawed in multiple ways, EPA reasonably concluded that it could not determine on the basis of the information available to it in July 2016 whether the area met the NAAQS.[39] EPA's treatment of the modeling data and other information before it—"scientific data within [EPA's] technical expertise"—must be given an "extreme degree of deference." *Miss. Comm'n*, 790 F.3d at 150 (quoting *City of Waukesha v. EPA*, 320 F.3d at 247).

III. The Wyandotte County area designation is reasonable, but the Board lacks standing to challenge it.

The Board challenges EPA's designation of Wyandotte County, Kansas, as unclassifiable[40] even though that designation imposes no new requirements on either the State of Kansas or local sources of SO_2, and the Board accordingly lacks standing. Even if the Board had standing to challenge the Wyandotte County designation, its

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[38] *See* Sierra Club Br. at 21, citing *Treasure State Res. Indus. Ass'n v. EPA*, 805 F.3d at 309, for the proposition that EPA must conform to minimum standards of rationality. The Agency agrees with that general proposition, but the tortured calculations Sierra Club proposes EPA should have made to prove that the Gallia County area was not in attainment with the NAAQS are not rational.

[39] The Agency has informed Petitioner that it plans to reconsider the resulting unclassifiable designation once certain additional air quality information is available. EPA-HQ-OAR-2014-0464-0443 (JA XX) (Jan. 18, 2017 Letter to Z. Fabish).

[40] *See* 81 Fed. Reg. at 45,048.

argument that EPA should have designated the area as "unclassifiable/attainment" based on a new, future emissions limit for a nearby Missouri plant, which was not federally enforceable or in effect when the Round 2 Rule was promulgated, fails.

A. The Board lacks standing.

"To establish Article III standing, an injury must be concrete, particularized, and actual or imminent; fairly traceable to the challenged action; and redressable by a favorable ruling." *Clapper v. Amnesty Int'l USA*, 568 U.S. 398, 409 (2013) (internal quotation marks and citations omitted). To meet its burden on this issue, the Board must show a "substantial probability" that "it has been injured, that the defendant caused its injury, and that the court could redress that injury." *Sierra Club v. EPA*, 292 F.3d 895, 899 (D.C. Cir. 2002) (citation omitted). The Board has established none of those prerequisites.

First, the Board has not shown any injury—let alone that there is a substantial probability that it has suffered a concrete, imminent injury. EPA's designation of Wyandotte County, Kansas, as unclassifiable is functionally equivalent to designating that area as unclassifiable/attainment. As this Court has explained, "EPA treats an 'unclassifiable' area as if it were in attainment." *Miss. Comm'n*, 790 F.3d at 145; *see also Catawba County, North Carolina v. EPA*, No. 05-1064, Mem. Op. at 2 (D.C. Cir. July 7, 2009) (Attachment 1) ("Unclassifiable areas are treated interchangeably with attainment areas for pollution control reasons."). Both designations require only that the SIP contain measures that prevent air quality deterioration. *See* 42 U.S.C. § 7471.

The Board complains that the challenged designation "creat[es] uncertainty" as to whether it might have to "add . . . more air control measures" to the Nearman plant at some point in the future. Board Br. at 17. But that is pure speculation. Unless the Wyandotte County area is redesignated as nonattainment for the 2010 SO_2 NAAQS under 42 U.S.C. § 7407(d)(3) or EPA finds the State's existing SIP to be substantially inadequate to attain or maintain the NAAQS under 42 U.S.C. § 7410(k)(5), the State has no obligation to require sources in that area to reduce emissions. And given that attainment or unclassifiable areas are equally susceptible to re-designation as nonattainment at any time based on new evidence, *see* 42 U.S.C. § 7407(d)(3), Wyandotte County cannot be said to be in any worse position in this regard than an area designated as unclassifiable/attainment for the 2010 SO_2 NAAQS. In any event, Article III "requires more than the possibility of potentially adverse regulation." *Defenders of Wildlife v. Perciasepe*, 714 F.3d 1317, 1324-25 (D.C. Cir. 2013).

Furthermore, even if the Wyandotte County area were someday re-designated as nonattainment, that does not necessarily mean that the Board would, in fact, have to impose new controls on the Nearman facility. Once an area is designated nonattainment, the State is required to demonstrate that the area will attain the NAAQS as expeditiously as practicable, 42 U.S.C. § 7514(a), and (in order to make that happen) is authorized to impose emission reduction requirements on facilities

that it determines are contributing to nonattainment.[41] But the state can also decide that additional control measures for a particular facility in the nonattainment area are not necessary.[42] In that case, the heightened permitting requirements triggered by the nonattainment new source review program would only apply to the Nearman plant if the Board chose to modify the facility. *See* 42 U.S.C. §§ 7503, 7411(a)(4). Thus, the Board's concern that it may someday have to impose new controls is at best, a theoretical possibility—not a "substantial probability" of concrete, imminent injury. *Sierra Club*, 292 F.3d at 899.

Next, even if the Board's alleged injury (uncertainty regarding whether it may someday have to impose new controls) were anything more than speculation based on a chain of events that may never occur, that injury would not be the result of the decision the Board challenges here: the designation of Wyandotte County as unclassifiable in the Round 2 Rule. Rather, that "injury" would flow from EPA's hypothetical future redesignation of the area as nonattainment or finding that Kansas' SIP is substantially inadequate—in either case, a separate final action that the Board could challenge on its merits if EPA takes such action. Thus, the Board's claimed

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[41] *See* Apr. 23, 2014, Memo from S. Page, "Guidance for 1-Hour SO2 Nonattainment Area SIP Submissions," at 9-10 & A-12 (JA XX-XX & XX), *available at* https://www.epa.gov/sites/production/files/2016-06/documents/20140423guidance_nonattainment_sip.pdf.

[42] *See id.* at A-12 (JA XX).

(speculative, future) injury is not "traceable to the challenged action," and the Board lacks standing. *Clapper*, 568 U.S. at 409.

Finally, the Board's claimed injury would not be redressed by an order from this Court remanding the Wyandotte County area designation to EPA. Even if, on remand, EPA changed that designation to unclassifiable/attainment, the area's legal status would not change. As discussed above, the area would still be subject to the same, less-stringent requirements as any other unclassifiable or attainment area, and would remain in the same "uncertain" position regarding whether, based on new facts, EPA may someday re-designate the area as nonattainment or determine that the state's SIP is inadequate to attain or maintain the NAAQS. Thus, the Board's alleged injury is not "redressable by a favorable ruling" here. *Clapper*, 568 U.S. at 409.

Thus, consistent with its past treatment of challenges to unclassifiable designations, *see* Attachment 1 (*Catawba* Mem. Op.) at 2-3, the Court should dismiss the Board's challenge to the Wyandotte County area designation for lack of standing.

B. EPA's decision to designate the Wyandotte County area as unclassifiable in July 2016 was reasonable and lawful.

Were the Court to reach the merits of the Board's challenge, EPA's designation of the Wyandotte County area as unclassifiable in the Round 2 Rule was reasonable and consistent with the Act. The Act defines "unclassifiable" as any area that cannot be designated "on the basis of available information as meeting or not meeting" the NAAQS. 42 U.S.C. § 7407(d)(1)(A)(iii). When it designated the Wyandotte County

area in July 2016, EPA considered all information then available to it and reasonably concluded that the "available information" did not allow it to determine whether the area had met the 2010 SO_2 NAAQS. *See* Kan. Final TSD[43] at 10 (JA XX).

1. EPA did not err by declining to designate the Wyandotte County area as unclassifiable/attainment based on a state emissions limit that was not in effect or federally enforceable when the Rule was promulgated.

The Board faults EPA for not designating the Wyandotte County area as "unclassifiable/attainment" based on modeling that relied on a new Missouri state emission limit for the nearby Veolia facility that was not yet in effect, incorporated into the Missouri SIP, or otherwise federally enforceable when the Round 2 Rule was promulgated in July 2016. *See* Board Br. at 24-25. But designations are determinations regarding current air quality,[44] which are made based on the information before the Agency at that time.[45] EPA has accordingly explained that, for a new emission limit or control to be relevant to a pending designation, it should be "federally enforceable . . . [and] require compliance before final designations are

[43] EPA-HQ-OAR-2014-0464-0391.

[44] *See* 42 U.S.C. § 7407(d)(1). To the extent one might argue that the present-tense language used to define "unclassifiable" and the other designation categories is ambiguous, EPA's interpretation of that language as requiring designations to reflect current air quality is reasonable and entitled to deference. *See Chevron*, 467 U.S. at 843.

[45] *See* Page Memo at 5 (JA XX); Modeling TAD at 2-3, 9-10 (JA XX-XX, XX-XX); *see also* 81 Fed. Reg. 45,041 ("These designations are based on . . . *[inter alia]* available air quality monitoring data or air quality modeling.").

issued." Page Memo at 5, Attachment 2 at 2 (JA XX).[46] Thus, for the new Missouri emission limit to be relevant to EPA's Round 2 designations, it would have had to be federally enforceable and require compliance before July 2016. *See* Kan. Preliminary TSD[47] at 23 (JA XX); Kan. Final TSD at 10 (JA XX). As the Board admits, Board Br. at 25, it was not. Rather, the emission limit on which the Board relies did not become enforceable by the State until a January 2017 compliance date, and it will not be federally enforceable until approved into Missouri's SIP. *See* Kan. Preliminary TSD at 23-24 (JA XX-XX) (citing Mo. Rule 10 CSR 10-6.26).[48] That has not yet happened.

The Board attempts to distinguish between EPA's designation of the Wyandotte County area as unclassifiable in the Round 2 Rule and the Agency's 2005

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[46] Petitioner misconstrues EPA's guidance in stating that use of emission limits in modeling is always "conservative" compared to modeling actual emissions. Board Br. at 13 & 28. Modeling for SO_2 designations is meant to simulate a monitor; therefore, EPA primarily recommends using the most recent three years of actual emissions. Modeling TAD at 3, 10 (JA XX, XX); Kan. Preliminary TSD at 30 n. 7 (JA XX). If emission limits higher than the most recent three years of actual emissions are used, the modeling likely would be "conservative" or over-predicting of impacts—but that is not the case if emission limits lower than the most recent three years of actual emissions are used, as was mostly the case with the modeling at issue here.

[47] EPA-HQ-OAR-2014-0464-0148.

[48] EPA also explained its reasoning by pointing to a different Missouri facility in the same circumstances: "EPA further notes that Blue Valley Station has three coal fired boilers and is required, in Missouri Rule 10 CSR 10-6.261, to switch to natural gas by January 1, 2017. . . . It is noted that Missouri Rule 10 CSR 10-6.261 has an initial compliance date after July 2, 2016, and has not yet been adopted into Missouri's SIP. Blue Valley has stated it intends to complete the fuel switch before July 2, 2016, but this requirement is not contained in a federally enforceable document, thus EPA is not accepting the KDHE attainment modeling that relies upon this fuel switch assumption." Kan. Preliminary TSD at 23-24 (JA XX-XX).

designations of various areas as nonattainment for the fine particulate matter NAAQS,[49] upheld by this Court in *Catawba County v. EPA*, 571 F.3d at 43. Board Br. at 29-31. The Board argues that, unlike in *Catawba County*, the emission reductions resulting from Missouri's new SO_2 limit for the Veolia facility were not "too speculative" for EPA to credit when designating the area. *Id.* at 30. But in fact the core point in both cases is the same: that it is entirely reasonable for the Agency to decline to designate an area as attainment when, at that time, the relevant sources have no federally enforceable obligation to reduce their emissions. *See Catawba County*, 571 F.3d at 43 (EPA reasonably declined to credit uncertain emission reductions, instead counting only reductions from "federally enforceable agreements that were in place by the time that EPA was required to promulgate the designations") (internal quotation omitted). Thus, like EPA's designation of certain areas as nonattainment in *Catawba County*, EPA's designation of the Wyandotte County area as unclassifiable based on the data available to EPA at the time was reasonable and lawful.

The Board also claims that EPA's refusal to make an attainment designation for the Wyandotte County area in July 2016, based on the new, not-yet-enforceable state emissions limit for the Veolia plant, is inconsistent with EPA's 2015 Data Rule. Board Br. at 25-26. To begin with, the Data Rule is not a designations rule; it requires

[49] *See* 70 Fed. Reg. 944 (Jan. 5, 2005).

states to characterize air quality around certain SO_2 sources.[50] While EPA anticipates using information submitted pursuant to the Data Rule in future actions, including designations, the Data Rule did not address what information must be considered by the Agency in the Round 2 process.[51] In fact, EPA explained when promulgating the Data Rule that "the round of designations that is required to be completed by July 2, 2016, will likely be conducted before state air agencies and the EPA will have been able to implement this final rule, and will instead rely upon data and information that is separately developed or obtained during the designations process." 80 Fed. Reg. at 51,056. Indeed, it would have been impracticable for EPA to ask for, or states to submit, data collected pursuant to the Data Rule during the Round 2 designations process given that, under the Data Rule, states did not have to tell EPA whether they intended to submit monitoring data, modeling analysis, or emission limits to meet their characterization obligations until July 1, 2016 (after the Administrator signed the Round 2 Rule[52]), let alone submit such modeling analyses in time for Round 2.

Moreover, while the Data Rule allowed sources to meet their obligations by submitting modeling that incorporates new emission limits by January 13, 2017, it mandated that such emission limits be federally enforceable and require compliance as

[50] *See* 80 Fed. Reg. 51,052-54.

[51] *See* RTC at 66, 68 (Data Rule is "out of scope of this final action") (JA XX, XX).

[52] *See* 81 Fed. Reg. at 45,045 (signature dated June 30, 2016).

of that date.[53] In other words, contrary to what the Board suggests, the Data Rule required that states' submissions be based on current air quality information, not projected future emissions based on not-yet-enforceable or in-effect limits. Thus, while the Data Rule did not address (and could not have addressed, given the deadlines set therein) what data EPA could rely on when making the Round 2 designations, it is not at odds with EPA's approach in the Round 2 Rule; rather, both rules required information that was representative of current air quality.

2. EPA did not err by designating the Wyandotte County area as unclassifiable absent data showing that an emissions decrease at the Veolia plant had resulted in the area attaining the standard.

The Board also argues that EPA should have designated the Wyandotte County area as unclassifiable/attainment in July 2016 based on the Veolia plant's "actual SO2 emissions," which the Board claims reflected reduced SO_2 emissions resulting from a fuel switch from coal to natural gas that was memorialized in a revision to the facility's Title V Permit. Board Br. at 23, 27. This line of argument is flawed on several fronts.

First, nothing in the Veolia facility's Title V permit at the time of the Round 2 Rule restricted it to using solely natural gas for fuel—as the Board has previously conceded.[54] The plant's Title V operating permit, issued in 2013, explicitly allows it to

[53] 40 C.F.R. § 51.1203(d)(2).

[54] EPA-HQ-OAR-2014-0464-0313 (Board Comment Letter) at Attachment 2-6 (JA XX) ("While Veolia is burning natural gas, BPU recognizes that there is no permit condition restricting Veolia from burning coal, and thus a coal restriction is not a federally enforceable requirement").

combust coal.[55] In December 2016 (six months after the Round 2 Rule), a construction permit was issued for the Veolia facility that did reflect a switch to natural gas, noting that the plant had "voluntarily discontinued combusting coal,"[56] and in August 2017, the facility applied for a renewal of its Title V permit that would incorporate the requirements of the December 2016 construction permit. Thus, the earliest date at which one can fairly assert that the Veolia plant was federally prohibited from burning coal is December 2016.

But more critically, the Board did not submit (and EPA did not otherwise have) data showing that the Wyandotte County area had attained the SO_2 NAAQS as of July 2016 because of recent emission reductions at the Veolia plant. The only modeling available to EPA when it issued the intended and final designations was based on

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[55] *See* 2013 Title V permit for Veolia facility at p. 12 (JA XX) (emissions/operational limitations for Boiler 6 and Boiler 8, Permit Condition EU0020-001 and EU0025-001); *see also* EPA-HQ-OAR-2014-0464-0092 at 5 n.6 (JA XX) ("Veolia allowable emissions were taken from Missouri DNR, Part 70 Permit to Operate, No. OP2012-050, March 4, 2013").

[56] *See* JA XX-XX (Veolia construction permit). The Board asserts that this switch was made in order to comply with EPA's "Boiler MACT Rule," in which the Agency issued emission standards for certain major sources of hazardous pollutants, see 78 Fed. Reg. 7138 (Jan. 31, 2013), and seems to suggest that EPA's refusal to credit the resulting emission decrease in the context of the Round 2 Rule is inconsistent with that prior regulation. Board Br. at 27. But the Board does not point to what federally enforceable SO_2 emission limit is applicable to Veolia under the Boiler MACT Rule, and in fact, since Veolia switched fuel to natural gas, there are no SO_2 limits or numeric limits for any pollutant applicable to Veolia under the MACT Rule. In any event, the Board did not provide an air quality characterization, such as modeling, that demonstrated that any such limit met the 2010 SO_2 NAAQS.

either the not-yet-enforceable Missouri emission limit, or the emission limits in effect at the time, or actual emissions from 2012-2014—and the latter two types of modeling were the basis for other stakeholders' arguments that the Wyandotte County area should be designated nonattainment. Conversely, EPA had no modeling that included the more recent actual emissions data. While the Board asserted that recent emissions were lower than those in previous years, it did not incorporate that alleged decrease into its modeling to demonstrate what impact it had on SO_2 concentrations, despite that information being available at the time of the public comment period. The Board did not, for example, model the Veolia facility's actual emissions for the most recent three-year period, which would have included higher emissions from the first two-plus years and any decrease in the last months.

Thus, EPA was not "promoting form over substance" (Board Br. at 27) when it declined to designate the Wyandotte County area as unclassifiable/attainment based on alleged emission reductions at the Veolia plant. Rather, EPA simply did not have "available information" (42 U.S.C. § 7407(d)(1)(A)(iii)) showing that recent changes at the Veolia plant had resulted in the Wyandotte County area meeting the NAAQS. *See* Kan. Final TSD at 10 (area was designated unclassifiable "based on the information available to the EPA at this time . . . and in the absence of any new information that would otherwise lead to a different conclusion regarding air quality in the area") (JA XX). EPA's designation of the Wyandotte County area as unclassifiable in July 2016 was therefore reasonable and lawful.

CONCLUSION

For the foregoing reasons, the Court should dismiss or deny these petitions.[57]

Respectfully submitted,

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February 12, 2018

[57] If this Court concluded otherwise, then it should remand the petition(s) in question to EPA so that the Agency could address the relevant technical issues. *See Safe Food & Fertilizer v. EPA*, 365 F.3d 46, 48 (D.C. Cir. 2004) (remanding issue requiring interpretation and further explanation of technical studies to Agency).

CERTIFICATE OF COMPLIANCE

I certify that the foregoing Respondents' Final Brief contains 12,690 words (excluding the parts of the brief exempted from the word count by Fed. R. App. P. 32(a)(7)(B)(iii) and Circuit Rule 32(a)(1)) as counted by the Microsoft Word software used to produce it, which is consistent with the limitation set forth in this Court's Nov. 2, 2017 Order (Doc. #1702751) (brief for EPA allotted 19,000 words), and is otherwise consistent with the requirements of Fed. R. App. P. 32(a)(7)(B).

/s/ *Amanda Shafer Berman*
Amanda Shafer Berman

February 12, 2018

CERTIFICATE OF SERVICE

I certify that the foregoing Respondents' Initial Brief was electronically filed with the Clerk of Court on February 12, 2018, using the CM/ECF system and thereby served upon all ECF-registered counsel.

/s/ *Amanda Shafer Berman*
Amanda Shafer Berman

February 12, 2018

Attachment A

United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 05-1064 **September Term, 2008**

CATAWBA COUNTY, NORTH CAROLINA,
PETITIONER

FILED ON: JULY 7, 2009

v.

ENVIRONMENTAL PROTECTION AGENCY,
RESPONDENT

SIERRA CLUB,
INTERVENOR

Consolidated with 05-1065, 05-1067, 05-1068, 05-1069, 05-1071, 05-1072, 05-1073, 05-1075, 05-1076, 05-1077, 05-1078, 05-1184, 05-1190, 05-1196, 05-1200, 05-1202, 06-1049, 06-1052, 06-1083, 06-1088, 06-1102, 06-1172, 07-1412, 07-1417, 07-1418, 07-1428, 07-1465, 07-1467, 07-1530

On Petitions for Review of Orders
of the Environmental Protection Agency

Before: TATEL, GARLAND and GRIFFITH, *Circuit Judges*.

JUDGMENT

This case was considered on the record from the Environmental Protection Agency and on the briefs and arguments of the parties. It is

ORDERED AND ADJUDGED that, in accordance with the unpublished memorandum and the published opinion issued herein this date, the petitions for review are denied in all respects except that the petition for review of the designation of Rockland County, New York, is granted. That single designation is remanded to the Environmental Protection Agency.

Pursuant to D.C. Circuit Rule 36, the memorandum will not be published. The Clerk is directed to withhold issuance of the mandate herein until seven days after resolution of any timely petition for rehearing or rehearing en banc. *See* FED. R. APP. P. 41(b); D.C. CIR. R. 41.

FOR THE COURT:
Mark J. Langer, Clerk

BY: /s/
MaryAnne Lister
Deputy Clerk

Opinion for the court filed Per Curiam

MEMORANDUM

Petitioners challenge EPA's area designations for the 1997 annual $PM_{2.5}$ NAAQS, raising a host of general challenges to EPA's methodology for designating areas as nonattainment, as well as individual challenges to particular county designations. Petitioners' general challenges to the area designations, as well as the specific challenges to the New York county designations, are resolved in a published opinion issued simultaneously herewith. This memorandum resolves the remaining challenges to the individual county designations, which petitioners contend are arbitrary and capricious.

In reviewing petitioners' challenges, "we apply that same highly deferential standard of review that we use under the Administrative Procedure Act," presuming the validity of EPA's action if some "rational basis" exists to support it. *Am. Trucking Ass'ns v. EPA*, 283 F.3d 355, 362 (D.C. Cir. 2002) (internal quotation marks omitted). Under this standard of review, "[i]t is not our function to resolve disagreement among the experts or to judge the merits of competing expert views." *Id.* (internal quotation marks omitted). Instead our task is the rather limited one of ascertaining whether EPA's action was reasonable and supported by the record. *Id.* Moreover, when it comes to decisions that rest on EPA's technical expertise (as it often does with this batch of challenges), we give an "extreme degree of deference" to EPA's judgments. *Am. Farm Bureau Fed'n v. EPA*, 559 F.3d 512, 519 (D.C. Cir. 2009) (internal quotation marks omitted). Applying this deferential standard, we consider each of petitioners' challenges in turn.

Oakland County, Michigan

Oakland County, Michigan is immediately north-northwest of Wayne County—home to Detroit and a monitored $PM_{2.5}$ violation. Part of the Detroit MSA, Oakland itself is attaining, though just barely. Its only monitor—4.3 miles from downtown Detroit and approximately 10.2 miles from the closest violating monitor in Wayne County—registered an annual design value of 14.8 $\mu g/m^3$. Although Michigan initially proposed designating Oakland as attainment, EPA modified the designation to nonattainment. It determined that Oakland contributes to nonattainment in Wayne County, relying on evidence that Oakland's weighted emissions score is higher than all other counties in the Detroit MSA except Wayne and Monroe County (both of which registered violations); its population size is second only to Wayne's; and 28 percent of its vehicle miles reflect commuter traffic into Wayne. *Technical Support Document* § 6.5.3. Oakland County (but not Michigan) subsequently petitioned EPA for reconsideration of that designation. EPA denied that request, again concluding that Oakland contributed to Wayne's violation. Undeterred, Oakland filed a second submission with EPA, insisting that it does not contribute to the $PM_{2.5}$ problem in Wayne. EPA rejected that submission as well.

All of Oakland's complaints lack merit. To begin with, we disagree with Oakland's contention that EPA ignored the meteorological data that Oakland submitted and that EPA otherwise failed to account for area wind patterns. In reality, the record demonstrates that EPA addressed and rejected Oakland's contentions about the meteorological evidence, and Oakland points to nothing that shows that EPA's conclusions in this regard were substantively unreasonable.

Nor do we agree that EPA adopted an erroneous "incremental contribution analysis" to justify Oakland's designation as nonattainment. Oakland Opening Br. 29. The record is clear that EPA always justified Oakland's designation on its original assessment of the nine factor test. It relied on the "incremental" analysis only to indulge—and to refute—Oakland's objection that $PM_{2.5}$ levels in Oakland are "below background" and thus that air becomes cleaner as it travels through Oakland on its way to Detroit. Furthermore, even if EPA did adopt the "incremental contribution analysis" as a justification for Oakland's nonattainment designation, it offered a reasoned explanation for why it thought its version of that analysis was appropriate despite Oakland's criticisms. *See* Letter from Stephen L. Johnson to Marc D. Machlin, Attach. 1 at 16–19 (Sept. 25, 2007).

We also disagree that EPA ignored its own documents purportedly confirming that Oakland makes no contribution to Wayne's nonattainment. Specifically, Oakland points to the so-called Rizzo Report, which it obtained through a FOIA request. As EPA argues, however, the Report post-dated the Designation Rule, and it does nothing to undermine the reasonableness of EPA's determination that Oakland contributes to nonattainment in Wayne County. Because the Report discusses only which sources are most responsible for violations at one particular monitor, the report hardly undermines EPA's assessment that Oakland's contribution of $PM_{2.5}$ is sizable enough to warrant a nonattainment designation for contributions to nonattainment throughout Wayne county.

Finally, we reject Oakland's argument that speciated data from monitors in Wayne County proves that the monitored violations in Wayne County are primarily the result of very localized industrial sources in Wayne. EPA rejected this argument in its response to Oakland's second petition, explaining among other things that its own evaluation of the speciation data suggested impacts from normal urban emissions, not simply industrial emissions close to the monitor. *See id.* at 23–24. Oakland offers no reason to think that this determination was arbitrary and capricious.

Oakland makes three additional arguments: (1) that weighted emissions scores are "meaningless" (2) that Oakland's weighted emissions score was artificially inflated; and (3) that EPA has set numerical thresholds for contribution in other kinds of $PM_{2.5}$ proceedings. Because Oakland raised these arguments only in its reply brief, they are waived. *See City of Waukesha v. EPA*, 320 F.3d 228, 250 n.22 (D.C. Cir. 2003) (argument "first raised comprehensibly only in the reply brief" is waived).

Anderson, Greenville, and Spartanburg Counties, South Carolina

Anderson, Greenville, and Spartanburg Counties, South Carolina, petition for review of their designation as "unclassifiable" for the annual $PM_{2.5}$ NAAQS. But because petitioners have failed to demonstrate that an unclassifiable designation injures them in any way, they have failed to demonstrate their Article III standing to challenge these individual designations. *See, e.g.*, *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 560 (1992) (to satisfy "the irreducible constitutional minimum of standing . . . . the plaintiff must have suffered an injury in fact" (internal quotation marks omitted)). Under the Clean Air Act, unclassifiable areas are treated interchangeably with attainment areas for pollution control purposes. *E.g.*, 42 U.S.C. § 7471 (state implementation plans must

contain measures "to prevent significant deterioration of air quality in each region (or portion thereof) designated pursuant to section 7407 of this title as attainment or unclassifiable."). As a result, there is nothing "self-evident" about whatever injury may follow from an unclassifiable designation that would allow petitioners to escape the normal requirement that their opening brief "include argument and evidence establishing the claim of standing," *see* D.C. CIR. R. 28(a)(7); *Sierra Club v. EPA*, 292 F.3d 895, 900–01 (D.C. Cir. 2002). Given that the counties' opening brief explained neither the injury that flows from an unclassifiable designation nor the redress that an attainment designation would afford, petitioners have failed to meet their initial burden to establish standing. Moreover, even if it were proper for the counties to set forth such arguments and evidence in the reply brief, petitioners' reply brief offers only ipse dixit assertions of injury and standing to sue. The South Carolina counties' petitions for review of their individual designations are therefore denied for lack of standing.

Catawba County, North Carolina

Catawba itself has a violating monitor but nonetheless argues that its nonattainment designation should be vacated because (1) the monitor is improperly sited under EPA's regulations; (2) the monitor is unrepresentative of air quality throughout the county; (3) EPA relied on one monitor to designate Catawba as nonattainment rather than using "spatial averaging"; and (4) EPA failed to consider future reductions in emissions that were likely to occur in the county. All of Catawba's challenges lack merit.

First, as to the improper monitor location, Catawba claims that the monitor is noncompliant with two regulations—one that governs monitor distance from the tree "dripline," 40 C.F.R. pt. 58 app. E § 8.2 (2004), and another that governs placing monitors away from "obstacles, such as buildings," *id.* We can easily reject the first challenge: after EPA pointed out in its brief that Catawba was citing the wrong regulation, Catawba conceded that the allegedly offending monitor actually complies with the minimum distance set forth in the right one. *See* Counties.' Reply Br. 30 & n.2 ("[T]he Catawba monitor is set just far enough from the dripline to meet the minimal requirements of the regulation . . . ."). As to the second purported regulatory infraction, Catawba provides no reason to question EPA's interpretation of the word "obstacle" as excluding elevated structures such as water towers, the supposed obstacle here. *See Auer v. Robbins*, 519 U.S. 452 (1997) (agency's interpretation of its own regulations "controlling unless plainly erroneous or inconsistent with the regulation" (internal quotation marks omitted)).

Second, regarding Catawba's claim that the air monitor is unrepresentative of county air quality because it is in a highly industrialized area in the county, North Carolina itself selected the monitor location as a "neighborhood scale" site—i.e., one that under EPA regulations is representative of conditions where people commonly live and work in the county, *see* 40 C.F.R. pt. 58 app. D § 2.8.0.5 (2004)—and EPA approved the selection of the site as such. We have no reason to second-guess EPA's technical judgment (nor North Carolina's) that the site is representative of local air quality. Although Catawba characterizes the area as "industrial," that bare characterization provides little reason to upset the "extreme deference" we afford to a decision like this, which rests

on EPA's technical expertise, *Am. Farm Bureau Fed'n*, 559 F.3d at 519 (internal quotation marks omitted), particularly given that the regulations themselves provide that an industrial area may in some circumstances be an appropriate site for a neighborhood scale monitor, *see* 40 C.F.R. pt. 58, Appx. D, § 2.8.0.5 ("This category also may include industrial and commercial neighborhoods especially in districts of diverse land use where residences are interspersed.").

Third, we reject the argument that EPA erred in failing to apply so-called spatial averaging to determine the appropriate designation. As EPA explains, the applicable regulations require the state to request spatial averaging, to have designed the monitoring network for such a purpose, and to have provided an opportunity for public notice and comment before designations may be based on this method. *See* Holmstead Memo Guidance at 4 (citing regulations). North Carolina did none of this, and Catawba offers no explanation for why EPA should have (or even could have) applied the spatial averaging sua sponte. Moreover, because we reject petitioner's first two claims that EPA relied on inappropriate and unrepresentative data to determine Catawba's attainment status, we also reject the county's argument that the lack of spatial averaging is problematic because it compounds these supposed errors.

Finally, as to the claim that EPA failed to take into account regulatory programs that will reduce $PM_{2.5}$ levels in Catawba, EPA looks to future emissions reductions only when deciding whether to designate a county that meets the $PM_{2.5}$ NAAQS as nonattainment based on contributions to a nearby violation—not when deciding whether to designate a county that itself violates the NAAQS. Indeed, EPA has consistently interpreted section 107(d)(1)(A) of the Clean Air Act, 42 U.S.C. § 7407(d)(1)(A), as requiring it to determine NAAQS violations based on current conditions rather than possible future conditions. Thus, there is nothing inconsistent about EPA's refusal to consider supposed emission reductions in Catawba's future as some kind of mitigating evidence against the present monitored violation.

Guilford County, North Carolina

Located in the Greensboro-Winston Salem-High Point CMSA, Guilford County, North Carolina, was designated nonattainment for contributions to a monitored violation in Davidson County. Guilford objects to the designation with a variety of arguments, but the only ones worth mentioning are: (1) that Guilford cannot contribute to violations in Davidson because it is predominantly downwind; and (2) that Guilford compares favorably to Forsyth County, which EPA eventually designated attainment. Neither argument is persuasive.

Various factors support the designation of Guilford as contributing to violations in the CMSA, and meteorology is among them. Guilford has the second highest weighted emissions score, it has high population and is among the most densely populated CMSA counties, it is among the fastest growing counties, and it has by far the greatest number of vehicle miles traveled. *See* Letter from J. I. Palmer, Jr. to William G. Ross, Attach. 1 at 3–8 (Jun. 29, 2004). EPA considered and rejected the argument that these factors—including Guilford's very high emissions rank—must be disregarded because Guilford is predominantly downwind of Davidson. Guilford lies directly to the

northeast of Davidson, and pollution roses indicate that the second-highest contribution to Davidson's nonattainment is from the northeast. *See* Letter from Stephen L. Johnson to George W. House, at 3 & Attach. 1 (Dec. 5, 2005). If anything, then, the wind data clearly supports EPA's designation.

Nor is the comparison to Forsyth compelling. Although Forsyth ranks higher in population density, it ranks lower in population growth and much lower in both vehicle miles traveled and weighted emissions score. *See* Letter from J. I. Palmer, Jr. to William G. Ross, Attach. 1 at 3–8 (Jun. 29, 2004). Pollution roses also indicate a stronger contribution from the direction of Guilford than from the direction of Forsyth, which lies to the north. It was eminently reasonable for EPA to treat these two different counties differently.

Catoosa County, Georgia

Catoosa County, Georgia, has no monitor, but was designated nonattainment for its contribution to nonattainment in the Chattanooga, Tennessee MSA. Although the county claims that EPA put undue and standardless emphasis on Catoosa's weighted emissions score of 11.9, it is clear from the record that Catoosa is similar to other nonattainment counties on many of the factors EPA considered, is by far the fastest growing county, has meaningful emissions, and sits between two counties with violating monitors. *Technical Support Document* § 6.4.2.4 & fig. 7.7. In short, the record plainly supports EPA's designation.

Catoosa therefore argues, as a fallback, that EPA should have excluded certain days from the monitoring data in the nearby counties of Walker and Hamilton because wildfires "from Arkansas to Alaska" made those days exceptional events. EPA considered and rejected this argument after extensive analysis, even hiring outside contractors to give full consideration to the possible impact of wildfires. *See, e.g.*, Letter from Stephen L. Johnson to Carol A. Couch (Jan. 20, 2006), at 1–4. Nothing in the record permits us to second guess this highly technical judgment. *See New York v. Reilly*, 969 F.2d at 1147, 1152 (D.C. Cir. 1992) ("We are extremely deferential to administrative agencies in cases involving technical rulemaking decisions . . . .").

Porter County, Indiana

Porter County, Indiana, lies within the Chicago CMSA and was designated nonattainment for contributions to violations in Lake County, which lies immediately to the west, and Cook County, which lies to the nearby northwest across Lake Michigan. The industry petitioners claim that Porter's emissions are inflated by EPA's flawed data on carbon emissions, are low relative to counties in other C/MSAs, and are irrelevant because the wind blows Porter's emissions away from the violating monitors. We find these objections unpersuasive.

Because Porter County is within the Chicago CMSA, it is presumed to contribute to violations in the metropolitan area. Although Porter County attempts to compare its weighted emissions score with those of attaining counties in other C/MSA's, that comparison fails to substantiate the claim

that Porter's designation as nonattainment is erroneous. As we explain in our published opinion, cross-C/MSA comparisons of weighted emissions scores are meaningless. The only thing Porter's weighted emissions score establishes is that the county accounts for over 9% of CMSA emissions. *See Technical Support Document* § 6.5.2.1. Using EPA's most up-to-date estimate of carbon emissions does nothing to benefit Porter County. Because most of its emissions are from a steel mill rather than from coal plants, its weighted emissions score actually rises to 9.9 with the new numbers. *See* Letter from Stephen L. Johnson to David M. Flannery, app. E at 1 (Aug. 19, 2007). And although the wind typically blows Porter's emissions away from the violating monitors, the wind does blow from the northeast or southeast 38% of the time. *Technical Support Document* § 6.5.2.1 Porter is the fourth highest emitter in the CMSA and the fastest growing county by far. *Id.* Moreover, like many of the CMSA counties, Porter's greatest contribution of urban and industrial activity comes from sources on Lake Michigan—i.e., sources that are closest to the monitored violations in the Chicago CMSA's urban areas. *See id.* fig. 7.8. The record thus amply supports EPA's contribution finding.

Randolph County, Illinois

Although Baldwin Township, in the northwest corner of Randolph County, Illinois, lies directly outside the St. Louis CMSA, EPA designated it nonattainment based on its contribution to violations in St. Louis. Baldwin has a large power plant that accounts for nearly all of Randolph County's emissions, and Randolph is otherwise a predominantly rural county. For this reason, EPA followed the state's recommendation and designated only Baldwin Township nonattainment, excluding the rest of the county from the designation.

Industry petitioners object, arguing that EPA applied only three of its nine factors, and did so incorrectly. They say that Randolph's weighted emissions score, which EPA relied on, is low relative to other counties designated attainment, that the wind does not blow emissions from Randolph towards the St. Louis CMSA, and that EPA failed to give proper credit for future emissions reductions. They also suggest that the other factors in EPA's test clearly cut against the designation, as Randolph County has the state's lowest design value and ranks very low for population, density, traffic, commuting, and projected growth.

These objections are faulty. Randolph's weighted emissions score of 8.9 may be low relative to counties designated attainment in other CMSAs, but it is comparable to many other counties designated nonattainment in this CMSA, including Franklin, Missouri (9.1), Jefferson, Missouri (10.4) and St. Charles, Missouri (10.2). *See id.* § 6.5.1.2. This kind of intra-MSA comparison is, again, the only way that a weighted emissions score may appropriately be used. The wind blows from Randolph towards the violating monitor 29% of the time—more often than it blows in any other direction. *Id.* And although petitioners suggest that EPA failed to consider the other factors in the nine-factor test that favored Baldwin, such as Randolph's clean air and rural population patterns, EPA did consider these points: indeed, they represent the very reasons EPA agreed to separate Baldwin Township from the rest of the county. *See* Letter from Stephen L. Johnson to Paul E. Guterman, at 4–7 (Jan. 20, 2006). Baldwin is responsible for nearly all of the county's emissions,

lies in the part of the county closest to the violating monitor, and the wind frequently carries those significant emissions in the direction of the violations. This is more than sufficient to explain the designation.

The Ohio Townships

As in Randolph County, EPA compromised with the state and designated certain high-emission townships as -nonattainment in lieu of designating the entire rural counties surrounding them. Although these townships relate to two separate C/MSAs, the industry petitioners brief their challenges to these designations together. They challenge the designation of Franklin Township in Coshocton County, a county bordering the Columbus MSA, and the designations of three townships in two counties bordering the Huntington-Ashland CMSA. Their arguments regarding these townships echo their arguments regarding Baldwin Township: that EPA applied only limited factors and did so incorrectly. Petitioners' point regarding the factors that EPA ignored has no more force here than it did with Baldwin Township—again, it was precisely because it considered these factors that EPA was willing to carve these high-emitting towns out of the largely rural counties in which they reside. As to the emissions and meteorological data that EPA considered in designating those townships as contributors to nearby violations, petitioners' arguments are unpersuasive.

The three townships outside the Huntington-Ashland MSA are located in two counties, Adams County and Gallia County. Adams has a weighted emissions score of 102.4; Gallia 141.4. *Technical Support Document* § 6.5.4.6. That is to say, Adams has emissions equal to the entire CMSA and Gallia has emissions exceeding the entire CMSA's by 40%. Most of these emissions come from power plants located in the disputed townships. The meteorological data indicate that the winds in these counties blow in every direction at least 19% of the time, indicating that they do blow emissions towards the violations with significant frequency. *Id.* EPA thus believed the substantial emissions from these sources were contributing to monitored violations in nearby counties, and given the size of the emissions at issue, we have no reason to suspect that judgment.

Petitioners submit that the cause of the nearby violations was a non-compliant coking plant which has since closed. This view, if true, may impact Ohio's SIP or subsequent designation decisions. But EPA's method was to use averages derived from three years of data, and those averages establish multiple nearby violations. Whether or not eliminating the emissions from the now-closed coking plant would be sufficient to bring the nearby monitors to attainment, it was not unreasonable for EPA to determine that the major emitters in Gallia and Adams were contributing to the violations that were appropriately established in and around the Huntington-Ashland CMSA.

We reach the same conclusion regarding Franklin Township, outside the Columbus MSA. Franklin emits most of Coshocton County's $PM_{2.5}$, which equals about 31% of MSA emissions. *Technical Support Document* § 6.5.4.4. The wind blows from the general direction of Franklin Township 34% of the time, *id.*, and according to EPA, pollution roses substantiate a contribution from that direction. The record thus contains sufficient evidence to support the designation, and we

have no basis to revisit EPA's technical judgment.

ORAL ARGUMENT NOT YET SCHEDULED

Nos. 16-1314 (and consolidated cases)

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

SAMUEL MASIAS, et al.,

Petitioners,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, et al.,

Respondents.

ON PETITION FOR REVIEW OF ACTION BY THE
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

RESPONDENTS' STATUTORY AND REGULATORY ADDENDUM

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February 12, 2018

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42 U.S.C.A. § 7407

§ 7407. Air quality control regions

Effective: January 23, 2004
Currentness

(a) Responsibility of each State for air quality; submission of implementation plan

Each State shall have the primary responsibility for assuring air quality within the entire geographic area comprising such State by submitting an implementation plan for such State which will specify the manner in which national primary and secondary ambient air quality standards will be achieved and maintained within each air quality control region in such State.

(b) Designated regions

For purposes of developing and carrying out implementation plans under section 7410 of this title--

(1) an air quality control region designated under this section before December 31, 1970, or a region designated after such date under subsection (c) of this section, shall be an air quality control region; and

(2) the portion of such State which is not part of any such designated region shall be an air quality control region, but such portion may be subdivided by the State into two or more air quality control regions with the approval of the Administrator.

(c) Authority of Administrator to designate regions; notification of Governors of affected States

The Administrator shall, within 90 days after December 31, 1970, after consultation with appropriate State and local authorities, designate as an air quality control region any interstate area or major intrastate area which he deems necessary or appropriate for the attainment and maintenance of ambient air quality standards. The Administrator shall immediately notify the Governors of the affected States of any designation made under this subsection.

(d) Designations

(1) Designations generally

(A) Submission by Governors of initial designations following promulgation of new or revised standards

By such date as the Administrator may reasonably require, but not later than 1 year after promulgation of a new or revised national ambient air quality standard for any pollutant under section 7409 of this title, the Governor of each State shall (and at any other time the Governor of a State deems appropriate the Governor may) submit to the Administrator a list of all areas (or portions thereof) in the State, designating as--

(i) nonattainment, any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant,

(ii) attainment, any area (other than an area identified in clause (i)) that meets the national primary or secondary ambient air quality standard for the pollutant, or

(iii) unclassifiable, any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

The Administrator may not require the Governor to submit the required list sooner than 120 days after promulgating a new or revised national ambient air quality standard.

(B) Promulgation by EPA of designations

(i) Upon promulgation or revision of a national ambient air quality standard, the Administrator shall promulgate the designations of all areas (or portions thereof) submitted under subparagraph (A) as expeditiously as practicable, but in no case later than 2 years from the date of promulgation of the new or revised national ambient air quality standard. Such period may be extended for up to one year in the event the Administrator has insufficient information to promulgate the designations.

(ii) In making the promulgations required under clause (i), the Administrator may make such modifications as the Administrator deems necessary to the designations of the areas (or portions thereof) submitted under subparagraph (A) (including to the boundaries of such areas or portions thereof). Whenever the Administrator intends to make a modification, the Administrator shall notify the State and provide such State with an opportunity to demonstrate why any proposed modification is inappropriate. The Administrator shall give such notification no later than 120 days before the date the Administrator promulgates the designation, including any modification thereto. If the Governor fails to submit the list in whole or in part, as required under subparagraph (A), the Administrator shall promulgate the designation that the Administrator deems appropriate for any area (or portion thereof) not designated by the State.

(iii) If the Governor of any State, on the Governor's own motion, under subparagraph (A), submits a list of areas (or portions thereof) in the State designated as nonattainment, attainment, or unclassifiable, the Administrator shall act on such designations in accordance with the procedures under paragraph (3) (relating to redesignation).

(iv) A designation for an area (or portion thereof) made pursuant to this subsection shall remain in effect until the area (or portion thereof) is redesignated pursuant to paragraph (3) or (4).

(C) Designations by operation of law

(i) Any area designated with respect to any air pollutant under the provisions of paragraph (1)(A), (B), or (C) of this subsection (as in effect immediately before November 15, 1990) is designated, by operation of law, as a nonattainment area for such pollutant within the meaning of subparagraph (A)(i).

(ii) Any area designated with respect to any air pollutant under the provisions of paragraph (1)(E) (as in effect immediately before November 15, 1990) is designated by operation of law, as an attainment area for such pollutant within the meaning of subparagraph (A)(ii).

(iii) Any area designated with respect to any air pollutant under the provisions of paragraph (1)(D) (as in effect immediately before November 15, 1990) is designated, by operation of law, as an unclassifiable area for such pollutant within the meaning of subparagraph (A)(iii).

(2) Publication of designations and redesignations

(A) The Administrator shall publish a notice in the Federal Register promulgating any designation under paragraph (1) or (5), or announcing any designation under paragraph (4), or promulgating any redesignation under paragraph (3).

(B) Promulgation or announcement of a designation under paragraph (1), (4) or (5) shall not be subject to the provisions of sections 553 through 557 of Title 5 (relating to notice and comment), except nothing herein shall be construed as precluding such public notice and comment whenever possible.

(3) Redesignation

(A) Subject to the requirements of subparagraph (E), and on the basis of air quality data, planning and control considerations, or any other air quality-related considerations the Administrator deems appropriate, the Administrator may at any time notify the Governor of any State that available information indicates that the designation of any area or portion of an area within the State or interstate area should be revised. In issuing such notification, which shall be public, to the Governor, the Administrator shall provide such information as the Administrator may have available explaining the basis for the notice.

(B) No later than 120 days after receiving a notification under subparagraph (A), the Governor shall submit to the Administrator such redesignation, if any, of the appropriate area (or areas) or portion thereof within the State or interstate area, as the Governor considers appropriate.

(C) No later than 120 days after the date described in subparagraph (B) (or paragraph (1)(B)(iii)), the Administrator shall promulgate the redesignation, if any, of the area or portion thereof, submitted by the Governor in accordance with subparagraph (B), making such modifications as the Administrator may deem necessary, in the same manner and under the same procedure as is applicable under clause (ii) of paragraph (1)(B), except that the phrase "60 days" shall be substituted for the phrase "120 days" in that clause. If the Governor does not submit, in accordance with

subparagraph (B), a redesignation for an area (or portion thereof) identified by the Administrator under subparagraph (A), the Administrator shall promulgate such redesignation, if any, that the Administrator deems appropriate.

(D) The Governor of any State may, on the Governor's own motion, submit to the Administrator a revised designation of any area or portion thereof within the State. Within 18 months of receipt of a complete State redesignation submittal, the Administrator shall approve or deny such redesignation. The submission of a redesignation by a Governor shall not affect the effectiveness or enforceability of the applicable implementation plan for the State.

(E) The Administrator may not promulgate a redesignation of a nonattainment area (or portion thereof) to attainment unless--

(i) the Administrator determines that the area has attained the national ambient air quality standard;

(ii) the Administrator has fully approved the applicable implementation plan for the area under section 7410(k) of this title;

(iii) the Administrator determines that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the applicable implementation plan and applicable Federal air pollutant control regulations and other permanent and enforceable reductions;

(iv) the Administrator has fully approved a maintenance plan for the area as meeting the requirements of section 7505a of this title; and

(v) the State containing such area has met all requirements applicable to the area under section 7410 of this title and part D of this subchapter.

(F) The Administrator shall not promulgate any redesignation of any area (or portion thereof) from nonattainment to unclassifiable.

(4) Nonattainment designations for ozone, carbon monoxide and particulate matter (PM-10)

(A) Ozone and carbon monoxide

(i) Within 120 days after November 15, 1990, each Governor of each State shall submit to the Administrator a list that designates, affirms or reaffirms the designation of, or redesignates (as the case may be), all areas (or portions thereof) of the Governor's State as attainment, nonattainment, or unclassifiable with respect to the national ambient air quality standards for ozone and carbon monoxide.

(ii) No later than 120 days after the date the Governor is required to submit the list of areas (or portions thereof) required under clause (i) of this subparagraph, the Administrator shall promulgate such designations, making such modifications as the Administrator may deem necessary, in the same manner, and under the same procedure,

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42 U.S.C.A. § 7408

§ 7408. Air quality criteria and control techniques

Effective: November 10, 1998
Currentness

(a) Air pollutant list; publication and revision by Administrator; issuance of air quality criteria for air pollutants

(1) For the purpose of establishing national primary and secondary ambient air quality standards, the Administrator shall within 30 days after December 31, 1970, publish, and shall from time to time thereafter revise, a list which includes each air pollutant--

(A) emissions of which, in his judgment, cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare;

(B) the presence of which in the ambient air results from numerous or diverse mobile or stationary sources; and

(C) for which air quality criteria had not been issued before December 31, 1970 but for which he plans to issue air quality criteria under this section.

(2) The Administrator shall issue air quality criteria for an air pollutant within 12 months after he has included such pollutant in a list under paragraph (1). Air quality criteria for an air pollutant shall accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare which may be expected from the presence of such pollutant in the ambient air, in varying quantities. The criteria for an air pollutant, to the extent practicable, shall include information on--

(A) those variable factors (including atmospheric conditions) which of themselves or in combination with other factors may alter the effects on public health or welfare of such air pollutant;

(B) the types of air pollutants which, when present in the atmosphere, may interact with such pollutant to produce an adverse effect on public health or welfare; and

(C) any known or anticipated adverse effects on welfare.

(b) Issuance by Administrator of information on air pollution control techniques; standing consulting committees for air pollutants; establishment; membership

(1) Simultaneously with the issuance of criteria under subsection (a) of this section, the Administrator shall, after consultation with appropriate advisory committees and Federal departments and agencies, issue to the States and appropriate air pollution control agencies information on air pollution control techniques, which information shall include data relating to the cost of installation and operation, energy requirements, emission reduction benefits, and environmental impact of the emission control technology. Such information shall include such data as are available on available technology and alternative methods of prevention and control of air pollution. Such information shall also include data on alternative fuels, processes, and operating methods which will result in elimination or significant reduction of emissions.

(2) In order to assist in the development of information on pollution control techniques, the Administrator may establish a standing consulting committee for each air pollutant included in a list published pursuant to subsection (a)(1) of this section, which shall be comprised of technically qualified individuals representative of State and local governments, industry, and the academic community. Each such committee shall submit, as appropriate, to the Administrator information related to that required by paragraph (1).

(c) Review, modification, and reissuance of criteria or information

The Administrator shall from time to time review, and, as appropriate, modify, and reissue any criteria or information on control techniques issued pursuant to this section. Not later than six months after August 7, 1977, the Administrator shall revise and reissue criteria relating to concentrations of NO_2 over such period (not more than three hours) as he deems appropriate. Such criteria shall include a discussion of nitric and nitrous acids, nitrites, nitrates, nitrosamines, and other carcinogenic and potentially carcinogenic derivatives of oxides of nitrogen.

(d) Publication in Federal Register; availability of copies for general public

The issuance of air quality criteria and information on air pollution control techniques shall be announced in the Federal Register and copies shall be made available to the general public.

(e) Transportation planning and guidelines

The Administrator shall, after consultation with the Secretary of Transportation, and after providing public notice and opportunity for comment, and with State and local officials, within nine months after November 15, 1990, and periodically thereafter as necessary to maintain a continuous transportation-air quality planning process, update the June 1978 Transportation-Air Quality Planning Guidelines and publish guidance on the development and implementation of transportation and other measures necessary to demonstrate and maintain attainment of national ambient air quality standards. Such guidelines shall include information on--

(1) methods to identify and evaluate alternative planning and control activities;

(2) methods of reviewing plans on a regular basis as conditions change or new information is presented;

(B) the potential effect of such processes, procedures, and methods on transportation systems and the provision of transportation services; and

(C) the environmental, energy, and economic impact of such processes, procedures, and methods.

(g) Assessment of risks to ecosystems

The Administrator may assess the risks to ecosystems from exposure to criteria air pollutants (as identified by the Administrator in the Administrator's sole discretion).

(h) RACT/BACT/LAER clearinghouse

The Administrator shall make information regarding emission control technology available to the States and to the general public through a central database. Such information shall include all control technology information received pursuant to State plan provisions requiring permits for sources, including operating permits for existing sources.

CREDIT(S)

(July 14, 1955, c. 360, Title I, § 108, as added Pub.L. 91-604, § 4(a), Dec. 31, 1970, 84 Stat. 1678; amended Pub.L. 95-95, Title I, §§ 104, 105, Title IV, § 401(a), Aug. 7, 1977, 91 Stat. 689, 790; Pub.L. 101-549, Title I, §§ 108(a) to (c), (o), 111, Nov. 15, 1990, 104 Stat. 2465, 2466, 2469, 2470; Pub.L. 105-362, Title XV, § 1501(b), Nov. 10, 1998, 112 Stat. 3294.)

Footnotes

1 So in original. The period probably should be a semicolon.

42 U.S.C.A. § 7408, 42 USCA § 7408

Current through P.L. 115-90. Also includes P.L. 115-92 to 115-117, 115-119, and 115-122. Title 26 current through 115-122.

End of Document

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42 U.S.C.A. § 7409

§ 7409. National primary and secondary ambient air quality standards

Currentness

(a) Promulgation

(1) The Administrator--

(A) within 30 days after December 31, 1970, shall publish proposed regulations prescribing a national primary ambient air quality standard and a national secondary ambient air quality standard for each air pollutant for which air quality criteria have been issued prior to such date; and

(B) after a reasonable time for interested persons to submit written comments thereon (but no later than 90 days after the initial publication of such proposed standards) shall by regulation promulgate such proposed national primary and secondary ambient air quality standards with such modifications as he deems appropriate.

(2) With respect to any air pollutant for which air quality criteria are issued after December 31, 1970, the Administrator shall publish, simultaneously with the issuance of such criteria and information, proposed national primary and secondary ambient air quality standards for any such pollutant. The procedure provided for in paragraph (1)(B) of this subsection shall apply to the promulgation of such standards.

(b) Protection of public health and welfare

(1) National primary ambient air quality standards, prescribed under subsection (a) of this section shall be ambient air quality standards the attainment and maintenance of which in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health. Such primary standards may be revised in the same manner as promulgated.

(2) Any national secondary ambient air quality standard prescribed under subsection (a) of this section shall specify a level of air quality the attainment and maintenance of which in the judgment of the Administrator, based on such criteria, is requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air. Such secondary standards may be revised in the same manner as promulgated.

(c) National primary ambient air quality standard for nitrogen dioxide

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42 U.S.C.A. § 7410

§ 7410. State implementation plans for national primary and secondary ambient air quality standards

Currentness

(a) Adoption of plan by State; submission to Administrator; content of plan; revision; new sources; indirect source review program; supplemental or intermittent control systems

(1) Each State shall, after reasonable notice and public hearings, adopt and submit to the Administrator, within 3 years (or such shorter period as the Administrator may prescribe) after the promulgation of a national primary ambient air quality standard (or any revision thereof) under section 7409 of this title for any air pollutant, a plan which provides for implementation, maintenance, and enforcement of such primary standard in each air quality control region (or portion thereof) within such State. In addition, such State shall adopt and submit to the Administrator (either as a part of a plan submitted under the preceding sentence or separately) within 3 years (or such shorter period as the Administrator may prescribe) after the promulgation of a national ambient air quality secondary standard (or revision thereof), a plan which provides for implementation, maintenance, and enforcement of such secondary standard in each air quality control region (or portion thereof) within such State. Unless a separate public hearing is provided, each State shall consider its plan implementing such secondary standard at the hearing required by the first sentence of this paragraph.

(2) Each implementation plan submitted by a State under this chapter shall be adopted by the State after reasonable notice and public hearing. Each such plan shall--

(A) include enforceable emission limitations and other control measures, means, or techniques (including economic incentives such as fees, marketable permits, and auctions of emissions rights), as well as schedules and timetables for compliance, as may be necessary or appropriate to meet the applicable requirements of this chapter;

(B) provide for establishment and operation of appropriate devices, methods, systems, and procedures necessary to--

(i) monitor, compile, and analyze data on ambient air quality, and

(ii) upon request, make such data available to the Administrator;

(C) include a program to provide for the enforcement of the measures described in subparagraph (A), and regulation of the modification and construction of any stationary source within the areas covered by the plan as necessary to assure that national ambient air quality standards are achieved, including a permit program as required in parts C and D of this subchapter;

(D) contain adequate provisions--

(i) prohibiting, consistent with the provisions of this subchapter, any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will--

(I) contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard, or

(II) interfere with measures required to be included in the applicable implementation plan for any other State under part C of this subchapter to prevent significant deterioration of air quality or to protect visibility,

(ii) insuring compliance with the applicable requirements of sections 7426 and 7415 of this title (relating to interstate and international pollution abatement);

(E) provide (i) necessary assurances that the State (or, except where the Administrator deems inappropriate, the general purpose local government or governments, or a regional agency designated by the State or general purpose local governments for such purpose) will have adequate personnel, funding, and authority under State (and, as appropriate, local) law to carry out such implementation plan (and is not prohibited by any provision of Federal or State law from carrying out such implementation plan or portion thereof), (ii) requirements that the State comply with the requirements respecting State boards under section 7428 of this title, and (iii) necessary assurances that, where the State has relied on a local or regional government, agency, or instrumentality for the implementation of any plan provision, the State has responsibility for ensuring adequate implementation of such plan provision;

(F) require, as may be prescribed by the Administrator--

(i) the installation, maintenance, and replacement of equipment, and the implementation of other necessary steps, by owners or operators of stationary sources to monitor emissions from such sources,

(ii) periodic reports on the nature and amounts of emissions and emissions-related data from such sources, and

(iii) correlation of such reports by the State agency with any emission limitations or standards established pursuant to this chapter, which reports shall be available at reasonable times for public inspection;

(G) provide for authority comparable to that in section 7603 of this title and adequate contingency plans to implement such authority;

(H) provide for revision of such plan--

(i) from time to time as may be necessary to take account of revisions of such national primary or secondary ambient air quality standard or the availability of improved or more expeditious methods of attaining such standard, and

(ii) except as provided in paragraph (3)(C), whenever the Administrator finds on the basis of information available to the Administrator that the plan is substantially inadequate to attain the national ambient air quality standard which it implements or to otherwise comply with any additional requirements established under this chapter;

(I) in the case of a plan or plan revision for an area designated as a nonattainment area, meet the applicable requirements of part D of this subchapter (relating to nonattainment areas);

(J) meet the applicable requirements of section 7421 of this title (relating to consultation), section 7427 of this title (relating to public notification), and part C of this subchapter (relating to prevention of significant deterioration of air quality and visibility protection);

(K) provide for--

(i) the performance of such air quality modeling as the Administrator may prescribe for the purpose of predicting the effect on ambient air quality of any emissions of any air pollutant for which the Administrator has established a national ambient air quality standard, and

(ii) the submission, upon request, of data related to such air quality modeling to the Administrator;

(L) require the owner or operator of each major stationary source to pay to the permitting authority, as a condition of any permit required under this chapter, a fee sufficient to cover--

(i) the reasonable costs of reviewing and acting upon any application for such a permit, and

(ii) if the owner or operator receives a permit for such source, the reasonable costs of implementing and enforcing the terms and conditions of any such permit (not including any court costs or other costs associated with any enforcement action),

until such fee requirement is superseded with respect to such sources by the Administrator's approval of a fee program under subchapter V of this chapter; and

(M) provide for consultation and participation by local political subdivisions affected by the plan.

(3)(A) Repealed. Pub.L. 101-549, Title I, § 101(d)(1), Nov. 15, 1990, 104 Stat. 2409

(B) As soon as practicable, the Administrator shall, consistent with the purposes of this chapter and the Energy Supply and Environmental Coordination Act of 1974 [15 U.S.C.A. § 791 et seq.], review each State's applicable implementation

plans and report to the State on whether such plans can be revised in relation to fuel burning stationary sources (or persons supplying fuel to such sources) without interfering with the attainment and maintenance of any national ambient air quality standard within the period permitted in this section. If the Administrator determines that any such plan can be revised, he shall notify the State that a plan revision may be submitted by the State. Any plan revision which is submitted by the State shall, after public notice and opportunity for public hearing, be approved by the Administrator if the revision relates only to fuel burning stationary sources (or persons supplying fuel to such sources), and the plan as revised complies with paragraph (2) of this subsection. The Administrator shall approve or disapprove any revision no later than three months after its submission.

(C) Neither the State, in the case of a plan (or portion thereof) approved under this subsection, nor the Administrator, in the case of a plan (or portion thereof) promulgated under subsection (c) of this section, shall be required to revise an applicable implementation plan because one or more exemptions under section 7418 of this title (relating to Federal facilities), enforcement orders under section 7413(d) of this title, suspensions under subsection (f) or (g) of this section (relating to temporary energy or economic authority), orders under section 7419 of this title (relating to primary nonferrous smelters), or extensions of compliance in decrees entered under section 7413(e) of this title (relating to iron- and steel-producing operations) have been granted, if such plan would have met the requirements of this section if no such exemptions, orders, or extensions had been granted.

(4) Repealed. Pub.L. 101-549, Title I, § 101(d)(2), Nov. 15, 1990, 104 Stat. 2409

(5)(A)(i) Any State may include in a State implementation plan, but the Administrator may not require as a condition of approval of such plan under this section, any indirect source review program. The Administrator may approve and enforce, as part of an applicable implementation plan, an indirect source review program which the State chooses to adopt and submit as part of its plan.

(ii) Except as provided in subparagraph (B), no plan promulgated by the Administrator shall include any indirect source review program for any air quality control region, or portion thereof.

(iii) Any State may revise an applicable implementation plan approved under this subsection to suspend or revoke any such program included in such plan, provided that such plan meets the requirements of this section.

(B) The Administrator shall have the authority to promulgate, implement and enforce regulations under subsection (c) of this section respecting indirect source review programs which apply only to federally assisted highways, airports, and other major federally assisted indirect sources and federally owned or operated indirect sources.

(C) For purposes of this paragraph, the term "indirect source" means a facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution. Such term includes parking lots, parking garages, and other facilities subject to any measure for management of parking supply (within the meaning of subsection (c)(2)(D)(ii) of this section), including regulation of existing off-street parking but such term does not include new or existing on-street parking. Direct emissions sources or facilities at, within, or associated with, any indirect source shall not be deemed indirect sources for the purpose of this paragraph.

(D) For purposes of this paragraph the term "indirect source review program" means the facility-by-facility review of indirect sources of air pollution, including such measures as are necessary to assure, or assist in assuring, that a new or modified indirect source will not attract mobile sources of air pollution, the emissions from which would cause or contribute to air pollution concentrations--

(i) exceeding any national primary ambient air quality standard for a mobile source-related air pollutant after the primary standard attainment date, or

(ii) preventing maintenance of any such standard after such date.

(E) For purposes of this paragraph and paragraph (2)(B), the term "transportation control measure" does not include any measure which is an "indirect source review program".

(6) No State plan shall be treated as meeting the requirements of this section unless such plan provides that in the case of any source which uses a supplemental, or intermittent control system for purposes of meeting the requirements of an order under section 7413(d) of this title or section 7419 of this title (relating to primary nonferrous smelter orders), the owner or operator of such source may not temporarily reduce the pay of any employee by reason of the use of such supplemental or intermittent or other dispersion dependent control system.

(b) Extension of period for submission of plans

The Administrator may, wherever he determines necessary, extend the period for submission of any plan or portion thereof which implements a national secondary ambient air quality standard for a period not to exceed 18 months from the date otherwise required for submission of such plan.

(c) Preparation and publication by Administrator of proposed regulations setting forth implementation plan; transportation regulations study and report; parking surcharge; suspension authority; plan implementation

(1) The Administrator shall promulgate a Federal implementation plan at any time within 2 years after the Administrator--

(A) finds that a State has failed to make a required submission or finds that the plan or plan revision submitted by the State does not satisfy the minimum criteria established under subsection (k)(1)(A) of this section, or

(B) disapproves a State implementation plan submission in whole or in part,

unless the State corrects the deficiency, and the Administrator approves the plan or plan revision, before the Administrator promulgates such Federal implementation plan.

(2)(A) Repealed. Pub.L. 101-549, Title I, § 101(d)(3)(A), Nov. 15, 1990, 104 Stat. 2409

(3) The Governor may include in any temporary emergency suspension issued under this subsection a provision delaying for a period identical to the period of such suspension any compliance schedule (or increment of progress) to which such source is subject under section 1857c-10 of this title as in effect before August 7, 1977, or under section 7413(d) of this title upon a finding that such source is unable to comply with such schedule (or increment) solely because of the conditions on the basis of which a suspension was issued under this subsection.

(h) Publication of comprehensive document for each State setting forth requirements of applicable implementation plan

(1) Not later than 5 years after November 15, 1990, and every 3 years thereafter, the Administrator shall assemble and publish a comprehensive document for each State setting forth all requirements of the applicable implementation plan for such State and shall publish notice in the Federal Register of the availability of such documents.

(2) The Administrator may promulgate such regulations as may be reasonably necessary to carry out the purpose of this subsection.

(i) Modification of requirements prohibited

Except for a primary nonferrous smelter order under section 7419 of this title, a suspension under subsection (f) or (g) of this section (relating to emergency suspensions), an exemption under section 7418 of this title (relating to certain Federal facilities), an order under section 7413(d) of this title (relating to compliance orders), a plan promulgation under subsection (c) of this section, or a plan revision under subsection (a)(3) of this section, no order, suspension, plan revision, or other action modifying any requirement of an applicable implementation plan may be taken with respect to any stationary source by the State or by the Administrator.

(j) Technological systems of continuous emission reduction on new or modified stationary sources; compliance with performance standards

As a condition for issuance of any permit required under this subchapter, the owner or operator of each new or modified stationary source which is required to obtain such a permit must show to the satisfaction of the permitting authority that the technological system of continuous emission reduction which is to be used at such source will enable it to comply with the standards of performance which are to apply to such source and that the construction or modification and operation of such source will be in compliance with all other requirements of this chapter.

(k) Environmental Protection Agency action on plan submissions

(1) Completeness of plan submissions

(A) Completeness criteria

Within 9 months after November 15, 1990, the Administrator shall promulgate minimum criteria that any plan submission must meet before the Administrator is required to act on such submission under this subsection. The

criteria shall be limited to the information necessary to enable the Administrator to determine whether the plan submission complies with the provisions of this chapter.

(B) Completeness finding

Within 60 days of the Administrator's receipt of a plan or plan revision, but no later than 6 months after the date, if any, by which a State is required to submit the plan or revision, the Administrator shall determine whether the minimum criteria established pursuant to subparagraph (A) have been met. Any plan or plan revision that a State submits to the Administrator, and that has not been determined by the Administrator (by the date 6 months after receipt of the submission) to have failed to meet the minimum criteria established pursuant to subparagraph (A), shall on that date be deemed by operation of law to meet such minimum criteria.

(C) Effect of finding of incompleteness

Where the Administrator determines that a plan submission (or part thereof) does not meet the minimum criteria established pursuant to subparagraph (A), the State shall be treated as not having made the submission (or, in the Administrator's discretion, part thereof).

(2) Deadline for action

Within 12 months of a determination by the Administrator (or a determination deemed by operation of law) under paragraph (1) that a State has submitted a plan or plan revision (or, in the Administrator's discretion, part thereof) that meets the minimum criteria established pursuant to paragraph (1), if applicable (or, if those criteria are not applicable, within 12 months of submission of the plan or revision), the Administrator shall act on the submission in accordance with paragraph (3).

(3) Full and partial approval and disapproval

In the case of any submittal on which the Administrator is required to act under paragraph (2), the Administrator shall approve such submittal as a whole if it meets all of the applicable requirements of this chapter. If a portion of the plan revision meets all the applicable requirements of this chapter, the Administrator may approve the plan revision in part and disapprove the plan revision in part. The plan revision shall not be treated as meeting the requirements of this chapter until the Administrator approves the entire plan revision as complying with the applicable requirements of this chapter.

(4) Conditional approval

The Administrator may approve a plan revision based on a commitment of the State to adopt specific enforceable measures by a date certain, but not later than 1 year after the date of approval of the plan revision. Any such conditional approval shall be treated as a disapproval if the State fails to comply with such commitment.

(5) Calls for plan revisions

Whenever the Administrator finds that the applicable implementation plan for any area is substantially inadequate to attain or maintain the relevant national ambient air quality standard, to mitigate adequately the interstate pollutant

transport described in section 7506a of this title or section 7511c of this title, or to otherwise comply with any requirement of this chapter, the Administrator shall require the State to revise the plan as necessary to correct such inadequacies. The Administrator shall notify the State of the inadequacies, and may establish reasonable deadlines (not to exceed 18 months after the date of such notice) for the submission of such plan revisions. Such findings and notice shall be public. Any finding under this paragraph shall, to the extent the Administrator deems appropriate, subject the State to the requirements of this chapter to which the State was subject when it developed and submitted the plan for which such finding was made, except that the Administrator may adjust any dates applicable under such requirements as appropriate (except that the Administrator may not adjust any attainment date prescribed under part D of this subchapter, unless such date has elapsed).

(6) Corrections

Whenever the Administrator determines that the Administrator's action approving, disapproving, or promulgating any plan or plan revision (or part thereof), area designation, redesignation, classification, or reclassification was in error, the Administrator may in the same manner as the approval, disapproval, or promulgation revise such action as appropriate without requiring any further submission from the State. Such determination and the basis thereof shall be provided to the State and public.

(l) Plan revisions

Each revision to an implementation plan submitted by a State under this chapter shall be adopted by such State after reasonable notice and public hearing. The Administrator shall not approve a revision of a plan if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress (as defined in section 7501 of this title), or any other applicable requirement of this chapter.

(m) Sanctions

The Administrator may apply any of the sanctions listed in section 7509(b) of this title at any time (or at any time after) the Administrator makes a finding, disapproval, or determination under paragraphs (1) through (4), respectively, of section 7509(a) of this title in relation to any plan or plan item (as that term is defined by the Administrator) required under this chapter, with respect to any portion of the State the Administrator determines reasonable and appropriate, for the purpose of ensuring that the requirements of this chapter relating to such plan or plan item are met. The Administrator shall, by rule, establish criteria for exercising his authority under the previous sentence with respect to any deficiency referred to in section 7509(a) of this title to ensure that, during the 24-month period following the finding, disapproval, or determination referred to in section 7509(a) of this title, such sanctions are not applied on a statewide basis where one or more political subdivisions covered by the applicable implementation plan are principally responsible for such deficiency.

(n) Savings clauses

(1) Existing plan provisions

Any provision of any applicable implementation plan that was approved or promulgated by the Administrator pursuant to this section as in effect before November 15, 1990, shall remain in effect as part of such applicable implementation plan, except to the extent that a revision to such provision is approved or promulgated by the Administrator pursuant to this chapter.

United States Code Annotated
Title 42. The Public Health and Welfare
Chapter 85. Air Pollution Prevention and Control (Refs & Annos)
Subchapter I. Programs and Activities
Part A. Air Quality and Emissions Limitations (Refs & Annos)

42 U.S.C.A. § 7411

§ 7411. Standards of performance for new stationary sources

Currentness

(a) Definitions

For purposes of this section:

(1) The term "standard of performance" means a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.

(2) The term "new source" means any stationary source, the construction or modification of which is commenced after the publication of regulations (or, if earlier, proposed regulations) prescribing a standard of performance under this section which will be applicable to such source.

(3) The term "stationary source" means any building, structure, facility, or installation which emits or may emit any air pollutant. Nothing in subchapter II of this chapter relating to nonroad engines shall be construed to apply to stationary internal combustion engines.

(4) The term "modification" means any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted.

(5) The term "owner or operator" means any person who owns, leases, operates, controls, or supervises a stationary source.

(6) The term "existing source" means any stationary source other than a new source.

(7) The term "technological system of continuous emission reduction" means--

(A) a technological process for production or operation by any source which is inherently low-polluting or nonpolluting, or

(B) a technological system for continuous reduction of the pollution generated by a source before such pollution is emitted into the ambient air, including precombustion cleaning or treatment of fuels.

(8) A conversion to coal (A) by reason of an order under section 2(a) of the Energy Supply and Environmental Coordination Act of 1974 [15 U.S.C.A. § 792(a)] or any amendment thereto, or any subsequent enactment which supersedes such Act [15 U.S.C.A. § 791 et seq.], or (B) which qualifies under section 7413(d)(5)(A)(ii) of this title, shall not be deemed to be a modification for purposes of paragraphs (2) and (4) of this subsection.

(b) List of categories of stationary sources; standards of performance; information on pollution control techniques; sources owned or operated by United States; particular systems; revised standards

(1)(A) The Administrator shall, within 90 days after December 31, 1970, publish (and from time to time thereafter shall revise) a list of categories of stationary sources. He shall include a category of sources in such list if in his judgment it causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.

(B) Within one year after the inclusion of a category of stationary sources in a list under subparagraph (A), the Administrator shall publish proposed regulations, establishing Federal standards of performance for new sources within such category. The Administrator shall afford interested persons an opportunity for written comment on such proposed regulations. After considering such comments, he shall promulgate, within one year after such publication, such standards with such modifications as he deems appropriate. The Administrator shall, at least every 8 years, review and, if appropriate, revise such standards following the procedure required by this subsection for promulgation of such standards. Notwithstanding the requirements of the previous sentence, the Administrator need not review any such standard if the Administrator determines that such review is not appropriate in light of readily available information on the efficacy of such standard. Standards of performance or revisions thereof shall become effective upon promulgation. When implementation and enforcement of any requirement of this chapter indicate that emission limitations and percent reductions beyond those required by the standards promulgated under this section are achieved in practice, the Administrator shall, when revising standards promulgated under this section, consider the emission limitations and percent reductions achieved in practice.

(2) The Administrator may distinguish among classes, types, and sizes within categories of new sources for the purpose of establishing such standards.

(3) The Administrator shall, from time to time, issue information on pollution control techniques for categories of new sources and air pollutants subject to the provisions of this section.

(4) The provisions of this section shall apply to any new source owned or operated by the United States.

(5) Except as otherwise authorized under subsection (h) of this section, nothing in this section shall be construed to require, or to authorize the Administrator to require, any new or modified source to install and operate any particular technological system of continuous emission reduction to comply with any new source standard of performance.

United States Code Annotated
Title 42. The Public Health and Welfare
Chapter 85. Air Pollution Prevention and Control (Refs & Annos)
Subchapter I. Programs and Activities
Part D. Plan Requirements for Nonattainment Areas
Subpart 1. Nonattainment Areas in General (Refs & Annos)

42 U.S.C.A. § 7502

§ 7502. Nonattainment plan provisions in general

Currentness

(a) Classifications and attainment dates

(1) Classifications

(A) On or after the date the Administrator promulgates the designation of an area as a nonattainment area pursuant to section 7407(d) of this title with respect to any national ambient air quality standard (or any revised standard, including a revision of any standard in effect on November 15, 1990), the Administrator may classify the area for the purpose of applying an attainment date pursuant to paragraph (2), and for other purposes. In determining the appropriate classification, if any, for a nonattainment area, the Administrator may consider such factors as the severity of nonattainment in such area and the availability and feasibility of the pollution control measures that the Administrator believes may be necessary to provide for attainment of such standard in such area.

(B) The Administrator shall publish a notice in the Federal Register announcing each classification under subparagraph (A), except the Administrator shall provide an opportunity for at least 30 days for written comment. Such classification shall not be subject to the provisions of sections 553 through 557 of Title 5 (concerning notice and comment) and shall not be subject to judicial review until the Administrator takes final action under subsection (k) or (l) of section 7410 of this title (concerning action on plan submissions) or section 7509 of this title (concerning sanctions) with respect to any plan submissions required by virtue of such classification.

(C) This paragraph shall not apply with respect to nonattainment areas for which classifications are specifically provided under other provisions of this part.

(2) Attainment dates for nonattainment areas

(A) The attainment date for an area designated nonattainment with respect to a national primary ambient air quality standard shall be the date by which attainment can be achieved as expeditiously as practicable, but no later than 5 years from the date such area was designated nonattainment under section 7407(d) of this title, except that the Administrator may extend the attainment date to the extent the Administrator determines appropriate, for a period no greater than 10 years from the date of designation as nonattainment, considering the severity of nonattainment and the availability and feasibility of pollution control measures.

(B) The attainment date for an area designated nonattainment with respect to a secondary national ambient air quality standard shall be the date by which attainment can be achieved as expeditiously as practicable after the date such area was designated nonattainment under section 7407(d) of this title.

(C) Upon application by any State, the Administrator may extend for 1 additional year (hereinafter referred to as the "Extension Year") the attainment date determined by the Administrator under subparagraph (A) or (B) if--

(i) the State has complied with all requirements and commitments pertaining to the area in the applicable implementation plan, and

(ii) in accordance with guidance published by the Administrator, no more than a minimal number of exceedances of the relevant national ambient air quality standard has occurred in the area in the year preceding the Extension Year.

No more than 2 one-year extensions may be issued under this subparagraph for a single nonattainment area.

(D) This paragraph shall not apply with respect to nonattainment areas for which attainment dates are specifically provided under other provisions of this part.

(b) Schedule for plan submissions

At the time the Administrator promulgates the designation of an area as nonattainment with respect to a national ambient air quality standard under section 7407(d) of this title, the Administrator shall establish a schedule according to which the State containing such area shall submit a plan or plan revision (including the plan items) meeting the applicable requirements of subsection (c) of this section and section 7410(a)(2) of this title. Such schedule shall at a minimum, include a date or dates, extending no later than 3 years from the date of the nonattainment designation, for the submission of a plan or plan revision (including the plan items) meeting the applicable requirements of subsection (c) of this section and section 7410(a)(2) of this title.

(c) Nonattainment plan provisions

The plan provisions (including plan items) required to be submitted under this part shall comply with each of the following:

(1) In general

Such plan provisions shall provide for the implementation of all reasonably available control measures as expeditiously as practicable (including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonably available control technology) and shall provide for attainment of the national primary ambient air quality standards.

(2) RFP

Such plan provisions shall require reasonable further progress.

(3) Inventory

Such plan provisions shall include a comprehensive, accurate, current inventory of actual emissions from all sources of the relevant pollutant or pollutants in such area, including such periodic revisions as the Administrator may determine necessary to assure that the requirements of this part are met.

(4) Identification and quantification

Such plan provisions shall expressly identify and quantify the emissions, if any, of any such pollutant or pollutants which will be allowed, in accordance with section 7503(a)(1)(B) of this title, from the construction and operation of major new or modified stationary sources in each such area. The plan shall demonstrate to the satisfaction of the Administrator that the emissions quantified for this purpose will be consistent with the achievement of reasonable further progress and will not interfere with attainment of the applicable national ambient air quality standard by the applicable attainment date.

(5) Permits for new and modified major stationary sources

Such plan provisions shall require permits for the construction and operation of new or modified major stationary sources anywhere in the nonattainment area, in accordance with section 7503 of this title.

(6) Other measures

Such plan provisions shall include enforceable emission limitations, and such other control measures, means or techniques (including economic incentives such as fees, marketable permits, and auctions of emission rights), as well as schedules and timetables for compliance, as may be necessary or appropriate to provide for attainment of such standard in such area by the applicable attainment date specified in this part.

(7) Compliance with section 7410(a)(2)

Such plan provisions shall also meet the applicable provisions of section 7410(a)(2) of this title.

(8) Equivalent techniques

Upon application by any State, the Administrator may allow the use of equivalent modeling, emission inventory, and planning procedures, unless the Administrator determines that the proposed techniques are, in the aggregate, less effective than the methods specified by the Administrator.

(9) Contingency measures

Such plan shall provide for the implementation of specific measures to be undertaken if the area fails to make reasonable further progress, or to attain the national primary ambient air quality standard by the attainment date applicable under this part. Such measures shall be included in the plan revision as contingency measures to take effect in any such case without further action by the State or the Administrator.

(d) Plan revisions required in response to finding of plan inadequacy

Any plan revision for a nonattainment area which is required to be submitted in response to a finding by the Administrator pursuant to section 7410(k)(5) of this title (relating to calls for plan revisions) must correct the plan deficiency (or deficiencies) specified by the Administrator and meet all other applicable plan requirements of section 7410 of this title and this part. The Administrator may reasonably adjust the dates otherwise applicable under such requirements to such revision (except for attainment dates that have not yet elapsed), to the extent necessary to achieve a consistent application of such requirements. In order to facilitate submittal by the States of adequate and approvable plans consistent with the applicable requirements of this chapter, the Administrator shall, as appropriate and from time to time, issue written guidelines, interpretations, and information to the States which shall be available to the public, taking into consideration any such guidelines, interpretations, or information provided before November 15, 1990.

(e) Future modification of standard

If the Administrator relaxes a national primary ambient air quality standard after November 15, 1990, the Administrator shall, within 12 months after the relaxation, promulgate requirements applicable to all areas which have not attained that standard as of the date of such relaxation. Such requirements shall provide for controls which are not less stringent than the controls applicable to areas designated nonattainment before such relaxation.

CREDIT(S)

(July 14, 1955, c. 360, Title I, § 172, as added Pub.L. 95-95, Title I, § 129(b), Aug. 7, 1977, 91 Stat. 746; amended Pub.L. 95-190, § 14(a)(55), (56), Nov. 16, 1977, 91 Stat. 1402; Pub.L. 101-549, Title I, § 102(b), Nov. 15, 1990, 104 Stat. 2412.)

42 U.S.C.A. § 7502, 42 USCA § 7502
Current through P.L. 115-90. Also includes P.L. 115-92 to 115-117, 115-119, and 115-122. Title 26 current through 115-122.

End of Document

United States Code Annotated
Title 42. The Public Health and Welfare
Chapter 85. Air Pollution Prevention and Control (Refs & Annos)
Subchapter I. Programs and Activities
Part D. Plan Requirements for Nonattainment Areas
Subpart 1. Nonattainment Areas in General (Refs & Annos)

42 U.S.C.A. § 7503

§ 7503. Permit requirements

Currentness

(a) In general

The permit program required by section 7502(b)(6) of this title shall provide that permits to construct and operate may be issued if--

(1) in accordance with regulations issued by the Administrator for the determination of baseline emissions in a manner consistent with the assumptions underlying the applicable implementation plan approved under section 7410 of this title and this part, the permitting agency determines that--

(A) by the time the source is to commence operation, sufficient offsetting emissions reductions have been obtained, such that total allowable emissions from existing sources in the region, from new or modified sources which are not major emitting facilities, and from the proposed source will be sufficiently less than total emissions from existing sources (as determined in accordance with the regulations under this paragraph) prior to the application for such permit to construct or modify so as to represent (when considered together with the plan provisions required under section 7502 of this title) reasonable further progress (as defined in section 7501 of this title); or

(B) in the case of a new or modified major stationary source which is located in a zone (within the nonattainment area) identified by the Administrator, in consultation with the Secretary of Housing and Urban Development, as a zone to which economic development should be targeted, that emissions of such pollutant resulting from the proposed new or modified major stationary source will not cause or contribute to emissions levels which exceed the allowance permitted for such pollutant for such area from new or modified major stationary sources under section 7502(c) of this title;

(2) the proposed source is required to comply with the lowest achievable emission rate;

(3) the owner or operator of the proposed new or modified source has demonstrated that all major stationary sources owned or operated by such person (or by any entity controlling, controlled by, or under common control with such person) in such State are subject to emission limitations and are in compliance, or on a schedule for compliance, with all applicable emission limitations and standards under this chapter; and [1]

(4) the Administrator has not determined that the applicable implementation plan is not being adequately implemented for the nonattainment area in which the proposed source is to be constructed or modified in accordance with the requirements of this part; and

(5) an analysis of alternative sites, sizes, production processes, and environmental control techniques for such proposed source demonstrates that benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location, construction, or modification.

Any emission reductions required as a precondition of the issuance of a permit under paragraph (1) shall be federally enforceable before such permit may be issued.

(b) Prohibition on use of old growth allowances

Any growth allowance included in an applicable implementation plan to meet the requirements of section 7502(b)(5) of this title (as in effect immediately before November 15, 1990) shall not be valid for use in any area that received or receives a notice under section 7410(a)(2)(H)(ii) of this title (as in effect immediately before November 15, 1990) or under section 7410(k)(1) of this title that its applicable implementation plan containing such allowance is substantially inadequate.

(c) Offsets

(1) The owner or operator of a new or modified major stationary source may comply with any offset requirement in effect under this part for increased emissions of any air pollutant only by obtaining emission reductions of such air pollutant from the same source or other sources in the same nonattainment area, except that the State may allow the owner or operator of a source to obtain such emission reductions in another nonattainment area if (A) the other area has an equal or higher nonattainment classification than the area in which the source is located and (B) emissions from such other area contribute to a violation of the national ambient air quality standard in the nonattainment area in which the source is located. Such emission reductions shall be, by the time a new or modified source commences operation, in effect and enforceable and shall assure that the total tonnage of increased emissions of the air pollutant from the new or modified source shall be offset by an equal or greater reduction, as applicable, in the actual emissions of such air pollutant from the same or other sources in the area.

(2) Emission reductions otherwise required by this chapter shall not be creditable as emissions reductions for purposes of any such offset requirement. Incidental emission reductions which are not otherwise required by this chapter shall be creditable as emission reductions for such purposes if such emission reductions meet the requirements of paragraph (1).

(d) Control technology information

The State shall provide that control technology information from permits issued under this section will be promptly submitted to the Administrator for purposes of making such information available through the RACT/BACT/LAER clearinghouse to other States and to the general public.

(e) Rocket engines or motors

United States Code Annotated
Title 42. The Public Health and Welfare
Chapter 85. Air Pollution Prevention and Control (Refs & Annos)
Subchapter I. Programs and Activities
Part D. Plan Requirements for Nonattainment Areas
Subpart 5. Additional Provisions for Areas Designated Nonattainment for Sulfur Oxides, Nitrogen Dioxide, or Lead

42 U.S.C.A. § 7514

§ 7514. Plan submission deadlines

Currentness

(a) Submission

Any State containing an area designated or redesignated under section 7407(d) of this title as nonattainment with respect to the national primary ambient air quality standards for sulfur oxides, nitrogen dioxide, or lead subsequent to November 15, 1990, shall submit to the Administrator, within 18 months of the designation, an applicable implementation plan meeting the requirements of this part.

(b) States lacking fully approved State implementation plans

Any State containing an area designated nonattainment with respect to national primary ambient air quality standards for sulfur oxides or nitrogen dioxide under section 7407(d)(1)(C)(i) of this title, but lacking a fully approved implementation plan complying with the requirements of this chapter (including this part) as in effect immediately before November 15, 1990, shall submit to the Administrator, within 18 months of November 15, 1990, an implementation plan meeting the requirements of subpart 1 (except as otherwise prescribed by section 7514a of this title).

CREDIT(S)

(July 14, 1955, c. 360, Title I, § 191, as added Pub.L. 101-549, Title I, § 106, Nov. 15, 1990, 104 Stat. 2463.)

42 U.S.C.A. § 7514, 42 USCA § 7514
Current through P.L. 115-90. Also includes P.L. 115-92 to 115-117, 115-119, and 115-122. Title 26 current through 115-122.

End of Document

United States Code Annotated
Title 42. The Public Health and Welfare
Chapter 85. Air Pollution Prevention and Control (Refs & Annos)
Subchapter I. Programs and Activities
Part D. Plan Requirements for Nonattainment Areas
Subpart 5. Additional Provisions for Areas Designated Nonattainment for Sulfur Oxides, Nitrogen Dioxide, or Lead

42 U.S.C.A. § 7514a

§ 7514a. Attainment dates

Currentness

(a) Plans under section 7514(a)

Implementation plans required under section 7514(a) of this title shall provide for attainment of the relevant primary standard as expeditiously as practicable but no later than 5 years from the date of the nonattainment designation.

(b) Plans under section 7514(b)

Implementation plans required under section 7514(b) of this title shall provide for attainment of the relevant primary national ambient air quality standard within 5 years after November 15, 1990.

(c) Inadequate plans

Implementation plans for nonattainment areas for sulfur oxides or nitrogen dioxide with plans that were approved by the Administrator before November 15, 1990, but, subsequent to such approval, were found by the Administrator to be substantially inadequate, shall provide for attainment of the relevant primary standard within 5 years from the date of such finding.

CREDIT(S)

(July 14, 1955, c. 360, Title I, § 192, as added Pub.L. 101-549, Title I, § 106, Nov. 15, 1990, 104 Stat. 2463.)

42 U.S.C.A. § 7514a, 42 USCA § 7514a
Current through P.L. 115-90. Also includes P.L. 115-92 to 115-117, 115-119, and 115-122. Title 26 current through 115-122.

End of Document

United States Code Annotated
Title 42. The Public Health and Welfare
Chapter 85. Air Pollution Prevention and Control (Refs & Annos)
Subchapter III. General Provisions

42 U.S.C.A. § 7619

§ 7619. Air quality monitoring

Effective: August 10, 2005
Currentness

(a) In general

After notice and opportunity for public hearing, the Administrator shall promulgate regulations establishing an air quality monitoring system throughout the United States which--

(1) utilizes uniform air quality monitoring criteria and methodology and measures such air quality according to a uniform air quality index,

(2) provides for air quality monitoring stations in major urban areas and other appropriate areas throughout the United States to provide monitoring such as will supplement (but not duplicate) air quality monitoring carried out by the States required under any applicable implementation plan,

(3) provides for daily analysis and reporting of air quality based upon such uniform air quality index, and

(4) provides for recordkeeping with respect to such monitoring data and for periodic analysis and reporting to the general public by the Administrator with respect to air quality based upon such data.

The operation of such air quality monitoring system may be carried out by the Administrator or by such other departments, agencies, or entities of the Federal Government (including the National Weather Service) as the President may deem appropriate. Any air quality monitoring system required under any applicable implementation plan under section 7410 of this title shall, as soon as practicable following promulgation of regulations under this section, utilize the standard criteria and methodology, and measure air quality according to the standard index, established under such regulations.

(b) Air quality monitoring data influenced by exceptional events

(1) Definition of exceptional event

In this section:

(A) In general

Code of Federal Regulations
Title 40. Protection of Environment
Chapter I. Environmental Protection Agency (Refs & Annos)
Subchapter C. Air Programs
Part 51. Requirements for Preparation, Adoption, and Submittal of Implementation Plans (Refs & Annos)

40 C.F.R. Pt. 51, App. W

Appendix W to Part 51—Guideline on Air Quality Models

Effective: May 22, 2017
Currentness

Preface

a. Industry and control agencies have long expressed a need for consistency in the application of air quality models for regulatory purposes. In the 1977 Clean Air Act (CAA), Congress mandated such consistency and encouraged the standardization of model applications. The Guideline on Air Quality Models (hereafter, Guideline) was first published in April 1978 to satisfy these requirements by specifying models and providing guidance for their use. The Guideline provides a common basis for estimating the air quality concentrations of criteria pollutants used in assessing control strategies and developing emissions limits.

b. The continuing development of new air quality models in response to regulatory requirements and the expanded requirements for models to cover even more complex problems have emphasized the need for periodic review and update of guidance on these techniques. Historically, three primary activities have provided direct input to revisions of the Guideline. The first is a series of periodic EPA workshops and modeling conferences conducted for the purpose of ensuring consistency and providing clarification in the application of models. The second activity was the solicitation and review of new models from the technical and user community. In the March 27, 1980, Federal Register, a procedure was outlined for the submittal to the EPA of privately developed models. After extensive evaluation and scientific review, these models, as well as those made available by the EPA, have been considered for recognition in the Guideline. The third activity is the extensive on-going research efforts by the EPA and others in air quality and meteorological modeling.

c. Based primarily on these three activities, new sections and topics have been included as needed. The EPA does not make changes to the guidance on a predetermined schedule, but rather on an as-needed basis. The EPA believes that revisions of the Guideline should be timely and responsive to user needs and should involve public participation to the greatest possible extent. All future changes to the guidance will be proposed and finalized in the Federal Register. Information on the current status of modeling guidance can always be obtained from the EPA's Regional Offices.

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2.0 Overview of Model Use

a. Increasing reliance has been placed on concentration estimates from air quality models as the primary basis for regulatory decisions concerning source permits and emission control requirements. In many situations, such as review of a proposed new source, no practical alternative exists. Before attempting to implement the guidance contained in this document, the reader should be aware of certain general information concerning air quality models and their evaluation and use. Such information is provided in this section.

2.1 Suitability of Models

a. The extent to which a specific air quality model is suitable for the assessment of source impacts depends upon several factors. These include: (1) The topographic and meteorological complexities of the area; (2) the detail and accuracy of the input databases, i.e., emissions inventory, meteorological data, and air quality data; (3) the manner in which complexities of atmospheric processes are handled in the model; (4) the technical competence of those undertaking such simulation modeling; and (5) the resources availableto apply the model. Any of these factors can have a significant influence on the overall model performance, which must be thoroughly evaluated to determine the suitability of an air quality model to a particular application or range of applications.

b. Air quality models are most accurate and reliable in areas that have gradual transitions of land use and topography. Meteorological conditions in these areas are spatially uniform such that observations are broadly representative and air quality model projections are not further complicated by a heterogeneous environment. Areas subject to major topographic influences experience meteorological complexities that are often difficult to measure and simulate. Models with adequate performance are available for increasingly complex environments. However, they are resource intensive and frequently require site-specific observations and formulations. Such complexities and the related challenges for the air quality simulation should be considered when selecting the most appropriate air quality model for an application.

c. Appropriate model input data should be available before an attempt is made to evaluate or apply an air quality model. Assuming the data are adequate, the greater the detail with which a model considers the spatial and temporal variations in meteorological conditions and permit-enforceable emissions, the greater the ability to evaluate the source impact and to distinguish the effects of various control strategies.

d. There are three types of models that have historically been used in the regulatory demonstrations applicable in the Guideline, each having strengths and weaknesses that lend themselves to particular regulatory applications.

i. Gaussian plume models use a "steady-state" approximation, which assumes that over the model time step, the emissions, meteorology and other model inputs, are constant throughout the model domain, resulting in a resolved plume with the emissions distributed throughout the plume according to a Gaussian distribution. This formulation allows Gaussian models to estimate near-field impacts of a limited number of sources at a relatively high resolution, with temporal scales of an hour and spatial scales of meters. However, this formulation allows for only relatively inert pollutants, with very limited considerations of transformation and removal (e.g., deposition), and further limits the domain for which the model may be used. Thus, Gaussian models may not be appropriate if model inputs are changing sharply over the model time step or within the desired model domain, or if more advanced considerations of chemistry are needed.

ii. Lagrangian puff models, on the other hand, are non-steady-state, and assume that model input conditions are changing over the model domain and model time step. Lagrangian models can also be used to determine near- and far-field impacts from a limited number of sources. Traditionally, Lagrangian models have been used for relatively inert pollutants, with slightly more complex considerations of removal than Gaussian models. Some Lagrangian models treat in-plume gas

and particulate chemistry. However, these models require time and space varying concentration fields of oxidants and, in the case of fine particulate matter ($PM_{2.5}$), neutralizing agents, such as ammonia. Reliable background fields are critical for applications involving secondary pollutant formation because secondary impacts generally occur when in-plume precursors mix and react with species in the background atmosphere. [7] [8] These oxidant and neutralizing agents are not routinely measured, but can be generated with a three-dimensional photochemical grid model.

iii. Photochemical grid models are three-dimensional Eulerian grid-based models that treat chemical and physical processes in each grid cell and use diffusion and transport processes to move chemical species between grid cells. [9] Eulerian models assume that emissions are spread evenly throughout each model grid cell. At coarse grid resolutions, Eulerian models have difficulty with fine scale resolution of individual plumes. However, these types of models can be appropriately applied for assessment of near-field and regional scale reactive pollutant impacts from specific sources [7] [10] [11] [12] or all sources. [13] [14] [15] Photochemical grid models simulate a more realistic environment for chemical transformation, [7] [12] but simulations can be more resource intensive than Lagrangian or Gaussian plume models.

e. Competent and experienced meteorologists, atmospheric scientists, and analysts are an essential prerequisite to the successful application of air quality models. The need for such specialists is critical when sophisticated models are used or the area has complicated meteorological or topographic features. It is important to note that a model applied improperly or with inappropriate data can lead to serious misjudgments regarding the source impact or the effectiveness of a control strategy.

f. The resource demands generated by use of air quality models vary widely depending on the specific application. The resources required may be important factors in the selection and use of a model or technique for a specific analysis. These resources depend on the nature of the model and its complexity, the detail of the databases, the difficulty of the application, the amount and level of expertise required, and the costs of manpower and computational facilities.

2.1.1 Model Accuracy and Uncertainty

a. The formulation and application of air quality models are accompanied by several sources of uncertainty. "Irreducible" uncertainty stems from the "unknown" conditions, which may not be explicitly accounted for in the model (e.g., the turbulent velocity field). Thus, there are likely to be deviations from the observed concentrations in individual events due to variations in the unknown conditions. "Reducible" uncertainties [16] are caused by: (1) Uncertainties in the "known" input conditions (e.g., emission characteristics and meteorological data); (2) errors in the measured concentrations; and (3) inadequate model physics and formulation.

b. Evaluations of model accuracy should focus on the reducible uncertainty associated with physics and the formulation of the model. The accuracy of the model is normally determined by an evaluation procedure which involves the comparison of model concentration estimates with measured air quality data. [17] The statement of model accuracy is based on statistical tests or performance measures such as bias, error, correlation, etc. [18] [19]

c. Since the 1980's, the EPA has worked with the modeling community to encourage development of standardized model evaluation methods and the development of continually improved methods for the characterization of model performance. [16] [18] [20] [21] [22] There is general consensus on what should be considered in the evaluation of air quality models; namely, quality assurance planning, documentation and scrutiny should be consistent with the intended use and should include:

• Scientific peer review;

• Supportive analyses (diagnostic evaluations, code verification, sensitivity analyses);

• Diagnostic and performance evaluations with data obtained in trial locations; and

• Statistical performance evaluations in the circumstances of the intended applications.

Performance evaluations and diagnostic evaluations assess different qualities of how well a model is performing, and both are needed to establish credibility within the client and scientific community.

d. Performance evaluations allow the EPA and model users to determine the relative performance of a model in comparison with alternative modeling systems. Diagnostic evaluations allow determination of a model capability to simulate individual processes that affect the results, and usually employ smaller spatial/temporal scale data sets (e.g., field studies). Diagnostic evaluations enable the EPA and model users to build confidence that model predictions are accurate for the right reasons. However, the objective comparison of modeled concentrations with observed field data provides only a partial means for assessing model performance. Due to the limited supply of evaluation datasets, there are practical limits in assessing model performance. For this reason, the conclusions reached in the science peer reviews and the supportive analyses have particular relevance in deciding whether a model will be useful for its intended purposes.

2.2 Levels of Sophistication of Air Quality Analyses and Models

a. It is desirable to begin an air quality analysis by using simplified and conservative methods followed, as appropriate, by more complex and refined methods. The purpose of this approach is to streamline the process and sufficiently address regulatory requirements by eliminating the need of more detailed modeling when it is not necessary in a specific regulatory application. For example, in the context of a PSD permit application, a simplified and conservative analysis may be sufficient where it shows the proposed construction clearly will not cause or contribute to ambient concentrations in excess of either the NAAQS or the PSD increments. [2] [3]

b. There are two general levels of sophistication of air quality models. The first level consists of screening models that provide conservative modeled estimates of the air quality impact of a specific source or source category based on simplified assumptions of the model inputs (e.g., preset, worst-case meteorological conditions). In the case of a PSD assessment, if a screening model indicates that the increase in concentration attributable to the source could cause or contribute to a violation of any NAAQS or PSD increment, then the second level of more sophisticated models should be applied unless appropriate controls or operational restrictions are implemented based on the screening modeling.

c. The second level consists of refined models that provide more detailed treatment of physical and chemical atmospheric processes, require more detailed and precise input data, and provide spatially and temporally resolved concentration estimates. As a result, they provide a more sophisticated and, at least theoretically, a more accurate estimate of source impact and the effectiveness of control strategies.

d. There are situations where a screening model or a refined model is not available such that screening and refined modeling are not viable options to determine source-specific air quality impacts. In such situations, a screening technique or reduced-form model may be viable options for estimating source impacts.

i. Screening techniques are differentiated from a screening model in that screening techniques are approaches that make simplified and conservative assumptions about the physical and chemical atmospheric processes important to determining source impacts, while screening models make assumptions about conservative inputs to a specific model. The complexity of screening techniques ranges from simplified assumptions of chemistry applied to refined or screening model output to sophisticated approximations of the chemistry applied within a refined model.

ii. Reduced-form models are computationally efficient simulation tools for characterizing the pollutant response to specific types of emission reductions for a particular geographic area or background environmental conditions that reflect underlying atmospheric science of a refined model but reduce the computational resources of running a complex, numerical air quality model such as a photochemical grid model.

In such situations, an attempt should be made to acquire or improve the necessary databases and to develop appropriate analytical techniques, but the screening technique or reduced-form model may be sufficient in conducting regulatory modeling applications when applied in consultation with the EPA Regional Office.

e. Consistent with the general principle described in paragraph 2.2(a), the EPA may establish a demonstration tool or method as a sufficient means for a user or applicant to make a demonstration required by regulation, either by itself or as part of a modeling demonstration. To be used for such regulatory purposes, such a tool or method must be reflected in a codified regulation or have a well-documented technical basis and reasoning that is contained or incorporated in the record of the regulatory decision in which it is applied.

2.3 Availability of Models

a. For most of the screening and refined models discussed in the Guideline, codes, associated documentation and other useful information are publicly available for download from the EPA's Support Center for Regulatory Atmospheric Modeling (SCRAM) Web site at https://www.epa.gov/scram. This is a Web site with which air quality modelers should become familiar and regularly visit for important model updates and additional clarifications and revisions to modeling guidance documents that are applicable to EPA programs and regulations. Codes and documentation may also be available from the National Technical Information Service (NTIS), http://www.ntis.gov, and, when available, is referenced with the appropriate NTIS accession number.

3.0 Preferred and Alternative Air Quality Models

a. This section specifies the approach to be taken in determining preferred models for use in regulatory air quality programs. The status of models developed by the EPA, as well as those submitted to the EPA for review and possible inclusion in this Guideline, is discussed in this section. The section also provides the criteria and process for obtaining EPA approval for use of alternative models for individual cases in situations where the preferred models are not applicable or available. Additional sources of relevant modeling information are: the EPA's Model Clearinghouse [23] (section 3.3); EPA modeling conferences; periodic Regional, State, and Local Modelers' Workshops; and the EPA's SCRAM Web site (section 2.3).

b. When approval is required for a specific modeling technique or analytical procedure in this Guideline, we refer to the "appropriate reviewing authority." Many states and some local agencies administer NSR permitting under programs approved into SIPs. In some EPA regions, federal authority to administer NSR permitting and related activities has been delegated to state or local agencies. In these cases, such agencies "stand in the shoes” of the respective EPA Region. Therefore, depending on the circumstances, the appropriate reviewing authority may be an EPA Regional Office, a state, local, or tribal agency, or perhaps the Federal Land Manager (FLM). In some cases, the Guideline requires review and approval of the use of an alternative model by the EPA Regional Office (sometimes stated as "Regional Administrator"). For all approvals of alternative models or techniques, the EPA Regional Office will coordinate and shall seek concurrence with the EPA's Model Clearinghouse. If there is any question as to the appropriate reviewing authority, you should contact the EPA Regional Office modeling contact (https://www3.epa.gov/ttn/scram/guidance_cont_regions.htm), whose jurisdiction generally includes the physical location of the source in question and its expected impacts.

c. In all regulatory analyses, early discussions among the EPA Regional Office staff, state, local, and tribal agency staff, industry representatives, and where appropriate, the FLM, are invaluable and are strongly encouraged. Prior to the actual analyses, agreement on the databases to be used, modeling techniques to be applied, and the overall technical approach helps avoid misunderstandings concerning the final results and may reduce the later need for additional analyses. The preparation of a written modeling protocol that is vetted with the appropriate reviewing authority helps to keep misunderstandings and resource expenditures at a minimum.

d. The identification of preferred models in this Guideline should not be construed as a determination that the preferred models identified here are to be permanently used to the exclusion of all others or that they are the only models available for relating emissions to air quality. The model that most accurately estimates concentrations in the area of interest is always sought. However, designation of specific preferred models is needed to promote consistency in model selection and application.

3.1 Preferred Models

3.1.1 Discussion

a. The EPA has developed some models suitable for regulatory application, while other models have been submitted by private developers for possible inclusion in the Guideline. Refined models that are preferred and required by the EPA for particular applications have undergone the necessary peer scientific reviews [24] [25] and model performance evaluation exercises [26] [27] that include statistical measures of model performance in comparison with measured air quality data as described in section 2.1.1.

b. An American Society for Testing and Materials (ASTM) reference [28] provides a general philosophy for developing and implementing advanced statistical evaluations of atmospheric dispersion models, and provides an example statistical technique to illustrate the application of this philosophy. Consistent with this approach, the EPA has determined and applied a specific evaluation protocol that provides a statistical technique for evaluating model performance for predicting peak concentration values, as might be observed at individual monitoring locations. [29]

c. When a single model is found to perform better than others, it is recommended for application as a preferred model and listed in appendix A. If no one model is found to clearly perform better through the evaluation exercise, then the preferred model listed in appendix A may be selected on the basis of other factors such as past use, public familiarity, resource requirements, and availability. Accordingly, the models listed in appendix A meet these conditions:

i. The model must be written in a common programming language, and the executable(s) must run on a common computer platform.

ii. The model must be documented in a user's guide or model formulation report which identifies the mathematics of the model, data requirements and program operating characteristics at a level of detail comparable to that available for other recommended models in appendix A.

iii. The model must be accompanied by a complete test dataset including input parameters and output results. The test data must be packaged with the model in computer-readable form.

iv. The model must be useful to typical users, e.g., state air agencies, for specific air quality control problems. Such users should be able to operate the computer program(s) from available documentation.

v. The model documentation must include a robust comparison with air quality data (and/or tracer measurements) or with other well-established analytical techniques.

vi. The developer must be willing to make the model and source code available to users at reasonable cost or make them available for public access through the Internet or National Technical Information Service. The model and its code cannot be proprietary.

d. The EPA's process of establishing a preferred model includes a determination of technical merit, in accordance with the above six items, including the practicality of the model for use in ongoing regulatory programs. Each model will also be subjected to a performance evaluation for an appropriate database and to a peer scientific review. Models for wide use (not just an isolated case) that are found to perform better will be proposed for inclusion as preferred models in future Guideline revisions.

e. No further evaluation of a preferred model is required for a particular application if the EPA requirements for regulatory use specified for the model in the Guideline are followed. Alternative models to those listed in appendix A should generally be compared with measured air quality data when they are used for regulatory applications consistent with recommendations in section 3.2.

3.1.2 Requirements

a. Appendix A identifies refined models that are preferred for use in regulatory applications. If a model is required for a particular application, the user must select a model from appendix A or follow procedures in section 3.2.2 for use of an alternative model or technique. Preferred models may be used without a formal demonstration of applicability as long as they are used as indicated in each model summary in appendix A. Further recommendations for the application of preferred models to specific source applications are found in subsequent sections of the Guideline.

b. If changes are made to a preferred model without affecting the modeled concentrations, the preferred status of the model is unchanged. Examples of modifications that do not affect concentrations are those made to enable use of a different computer platform or those that only affect the format or averaging time of the model results. The integration of a graphical user interface (GUI) to facilitate setting up the model inputs and/or analyzing the model results without otherwise altering the preferred model code is another example of a modification that does not affect concentrations. However, when any changes are made, the Regional Administrator must require a test case example to demonstrate that the modeled concentrations are not affected.

c. A preferred model must be operated with the options listed in appendix A for its intended regulatory application. If the regulatory options are not applied, the model is no longer "preferred." Any other modification to a preferred model that would result in a change in the concentration estimates likewise alters its status so that it is no longer a preferred model. Use of the modified model must then be justified as an alternative model on a case-by-case basis to the appropriate reviewing authority and approved by the Regional Administrator.

d. Where the EPA has not identified a preferred model for a particular pollutant or situation, the EPA may establish a multi-tiered approach for making a demonstration required under PSD or another CAA program. The initial tier or tiers may involve use of demonstration tools, screening models, screening techniques, or reduced-form models; while the last tier may involve the use of demonstration tools, refined models or techniques, or alternative models approved under section 3.2.

3.2 Alternative Models

4.0 Models for Carbon Monoxide, Lead, Sulfur Dioxide, Nitrogen Dioxide and Primary Particulate Matter

4.1 Discussion

a. This section identifies modeling approaches generally used in the air quality impact analysis of sources that emit the criteria pollutants carbon monoxide (CO), lead, sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and primary particulates ($PM_2$and PM_{10}).

b. The guidance in this section is specific to the application of the Gaussian plume models identified in appendix A. Gaussian plume models assume that emissions and meteorology are in a steady-state, which is typically based on an hourly time step. This approach results in a plume that has an hourly-averaged distribution of emission mass according to a Gaussian curve through the plume. Though Gaussian steady-state models conserve the mass of the primary pollutant throughout the plume, they can still take into account a limited consideration of first-order removal processes (e.g., wet and dry deposition) and limited chemical conversion (e.g., OH oxidation).

c. Due to the steady-state assumption, Gaussian plume models are generally considered applicable to distances less than 50 km, beyond which, modeled predictions of plume impact are likely conservative. The locations of these impacts are expected to be unreliable due to changes in meteorology that are likely to occur during the travel time.

d. The applicability of Gaussian plume models may vary depending on the topography of the modeling domain, i.e., simple or complex. Simple terrain is considered to be an area where terrain features are all lower in elevation than the top of the stack(s) of the source(s) in question. Complex terrain is defined as terrain exceeding the height of the stack(s) being modeled.

e. Gaussian models determine source impacts at discrete locations (receptors) for each meteorological and emission scenario, and generally attempt to estimate concentrations at specific sites that represent an ensemble average of numerous repetitions of the same "event." Uncertainties in model estimates are driven by this formulation, and as noted in section 2.1.1, evaluations of model accuracy should focus on the reducible uncertainty associated with physics and the formulation of the model. The "irreducible" uncertainty associated with Gaussian plume models may be responsible for variation in concentrations of as much as ± 50 percent.[30] "Reducible" uncertainties [16] can be on a similar scale. For example, Pasquill [31] estimates that, apart from data input errors, maximum ground-level concentrations at a given hour for a point source in flat terrain could be in error by 50 percent due to these uncertainties. Errors of 5 to 10 degrees in the measured wind direction can result in concentration errors of 20 to 70 percent for a particular time and location, depending on stability and station location. Such uncertainties do not indicate that an estimated concentration does not occur, only that the precise time and locations are in doubt. Composite errors in highest estimated concentrations of 10 to 40 percent are found to be typical.[32] [33] However, estimates of concentrations paired in time and space with observed concentrations are less certain.

f. Model evaluations and inter-comparisons should take these aspects of uncertainty into account. For a regulatory application of a model, the emphasis of model evaluations is generally placed on the highest modeled impacts. Thus, the Cox–Tikvart model evaluation approach, which compares the highest modeled impacts on several timescales, is recommended for comparisons of models and measurements and model inter-comparisons. The approach includes bootstrap techniques to determine the significance of various modeled predictions and increases the robustness of such comparisons when the number of available measurements are limited.[34] [35] Because of the uncertainty in paired modeled and observed concentrations, any attempts at calibration of models based on these comparisons is of questionable benefit and shall not be done.

4.2 Requirements

a. For NAAQS compliance demonstrations under PSD, use of the screening and preferred models for the pollutants listed in this subsection shall be limited to the near-field at a nominal distance of 50 km or less. Near-field application is consistent with capabilities of Gaussian plume models and, based on the EPA's assessment, is sufficient to address whether a source will cause or contribute to ambient concentrations in excess of a NAAQS. In most cases, maximum source impacts of inert pollutants will occur within the first 10 to 20 km from the source. Therefore, the EPA does not consider a long-range transport assessment beyond 50 km necessary for these pollutants if a near-field NAAQS compliance demonstration is required. 36

b. For assessment of PSD increments within the near-field distance of 50 km or less, use of the screening and preferred models for the pollutants listed in this subsection shall be limited to the same screening and preferred models approved for NAAQS compliance demonstrations.

c. To determine if a compliance demonstration for NAAQS and/or PSD increments may be necessary beyond 50 km (i.e., long-range transport assessment), the following screening approach shall be used to determine if a significant ambient impact will occur with particular focus on Class I areas and/or the applicable receptors that may be threatened at such distances.

i. Based on application in the near-field of the appropriate screening and/or preferred model, determine the significance of the ambient impacts at or about 50 km from the new or modifying source. If a near-field assessment is not available or this initial analysis indicates there may be significant ambient impacts at that distance, then further assessment is necessary.

ii.d. For assessment of the significance of ambient impacts for NAAQS and/or PSD increments, there is not a preferred model or screening approach for distances beyond 50 km. Thus, the appropriate reviewing authority (paragraph 3.0(b)) and the EPA Regional Office shall be consulted in determining the appropriate and agreed upon screening technique to conduct the second level assessment. Typically, a Lagrangian model is most appropriate to use for these second level assessments, but applicants shall reach agreement on the specific model and modeling parameters on a case-by-case basis in consultation with the appropriate reviewing authority (paragraph 3.0(b)) and EPA Regional Office. When Lagrangian models are used in this manner, they shall not include plume-depleting processes, such that model estimates are considered conservative, as is generally appropriate for screening assessments.

d. In those situations where a cumulative impact analysis for NAAQS and/or PSD increments analysis beyond 50 km is necessary, the selection and use of an alternative model shall occur in agreement with the appropriate reviewing authority (paragraph 3.0(b)) and approval by the EPA Regional Office based on the requirements of paragraph 3.2.2(e).

4.2.1 Screening Models and Techniques

a. Where a preliminary or conservative estimate is desired, point source screening techniques are an acceptable approach to air quality analyses.

b. As discussed in paragraph 2.2(a), screening models or techniques are designed to provide a conservative estimate of concentrations. The screening models used in most applications are the screening versions of the preferred models for refined applications. The two screening models, AERSCREEN [37] [38] and CTSCREEN, are screening versions of AERMOD (American Meteorological Society (AMS)/EPA Regulatory Model) and CTDMPLUS (Complex Terrain

Dispersion Model Plus Algorithms for Unstable Situations), respectively. AERSCREEN is the recommended screening model for most applications in all types of terrain and for applications involving building downwash. For those applications in complex terrain where the application involves a well-defined hill or ridge, CTSCREEN [39] can be used.

c. Although AERSCREEN and CTSCREEN are designed to address a single-source scenario, there are approaches that can be used on a case-by-case basis to address multi-source situations using screening meteorology or other conservative model assumptions. However, the appropriate reviewing authority (paragraph 3.0(b)) shall be consulted, and concurrence obtained, on the protocol for modeling multiple sources with AERSCREEN or CTSCREEN to ensure that the worst case is identified and assessed.

d. As discussed in section 4.2.3.4, there are also screening techniques built into AERMOD that use simplified or limited chemistry assumptions for determining the partitioning of NO and NO_2 for NO_2 modeling. These screening techniques are part of the EPA's preferred modeling approach for NO_2 and do not need to be approved as an alternative model. However, as with other screening models and techniques, their usage shall occur in agreement with the appropriate reviewing authority (paragraph 3.0(b)).

e. As discussed in section 4.2(c)(ii), there are screening techniques needed for long-range transport assessments that will typically involve the use of a Lagrangian model. Based on the long-standing practice and documented capabilities of these models for long-range transport assessments, the use of a Lagrangian model as a screening technique for this purpose does not need to be approved as an alternative model. However, their usage shall occur in consultation with the appropriate reviewing authority (paragraph 3.0(b)) and EPA Regional Office.

f. All screening models and techniques shall be configured to appropriately address the site and problem at hand. Close attention must be paid to whether the area should be classified urban or rural in accordance with section 7.2.1.1. The climatology of the area must be studied to help define the worst-case meteorological conditions. Agreement shall be reached between the model user and the appropriate reviewing authority (paragraph 3.0(b)) on the choice of the screening model or technique for each analysis, on the input data and model settings, and the appropriate metric for satisfying regulatory requirements.

4.2.1.1 AERSCREEN

a. Released in 2011, AERSCREEN is the EPA's recommended screening model for simple and complex terrain for single sources including point sources, area sources, horizontal stacks, capped stacks, and flares. AERSCREEN runs AERMOD in a screening mode and consists of two main components: 1) the MAKEMET program which generates a site-specific matrix of meteorological conditions for input to the AERMOD model; and 2) the AERSCREEN command-prompt interface.

b. The MAKEMET program generates a matrix of meteorological conditions, in the form of AERMOD–ready surface and profile files, based on user-specified surface characteristics, ambient temperatures, minimum wind speed, and anemometer height. The meteorological matrix is generated based on looping through a range of wind speeds, cloud covers, ambient temperatures, solar elevation angles, and convective velocity scales (w*, for convective conditions only) based on user-specified surface characteristics for surface roughness (Z_o), Bowen ratio (B_o), and albedo (r). For unstable cases, the convective mixing height (Z_{ic}) is calculated based on w*, and the mechanical mixing height (Z_{im}) is calculated for unstable and stable conditions based on the friction velocity, u*.

c. For applications involving simple or complex terrain, AERSCREEN interfaces with AERMAP. AERSCREEN also interfaces with BPIPPRM to provide the necessary building parameters for applications involving building downwash using the Plume Rise Model Enhancements (PRIME) downwash algorithm. AERSCREEN generates inputs

to AERMOD via MAKEMET, AERMAP, and BPIPPRM and invokes AERMOD in a screening mode. The screening mode of AERMOD forces the AERMOD model calculations to represent values for the plume centerline, regardless of the source-receptor-wind direction orientation. The maximum concentration output from AERSCREEN represents a worst-case 1–hour concentration. Averaging-time scaling factors of 1.0 for 3–hour, 0.9 for 8–hour, 0.60 for 24–hour, and 0.10 for annual concentration averages are applied internally by AERSCREEN to the highest 1–hour concentration calculated by the model for non-area type sources. For area type source concentrations for averaging times greater than one hour, the concentrations are equal to the 1–hour estimates. [37] [40]

4.2.1.2 CTSCREEN

a. CTSCREEN [39] [41] can be used to obtain conservative, yet realistic, worst-case estimates for receptors located on terrain above stack height. CTSCREEN accounts for the three-dimensional nature of plume and terrain interaction and requires detailed terrain data representative of the modeling domain. The terrain data must be digitized in the same manner as for CTDMPLUS and a terrain processor is available. [42] CTSCREEN is designed to execute a fixed matrix of meteorological values for wind speed (u), standard deviation of horizontal and vertical wind speeds (#v, #w), vertical potential temperature gradient (d#/dz), friction velocity (u*),* Monin–Obukhov length (L), mixing height (z_i) as a function of terrain height, and wind directions for both neutral/stable conditions and unstable convective conditions. The maximum concentration output from CTSCREEN represents a worst-case 1–hour concentration. Time-scaling factors of 0.7 for 3–hour, 0.15 for 24–hour and 0.03 for annual concentration averages are applied internally by CTSCREEN to the highest 1–hour concentration calculated by the model.

4.2.1.3 Screening in Complex Terrain

a. For applications utilizing AERSCREEN, AERSCREEN automatically generates a polar-grid receptor network with spacing determined by the maximum distance to model. If the application warrants a different receptor network than that generated by AERSCREEN, it may be necessary to run AERMOD in screening mode with a user-defined network. For CTSCREEN applications or AERMOD in screening mode outside of AERSCREEN, placement of receptors requires very careful attention when modeling in complex terrain. Often the highest concentrations are predicted to occur under very stable conditions, when the plume is near or impinges on the terrain. Under such conditions, the plume may be quite narrow in the vertical, so that even relatively small changes in a receptor's location may substantially affect the predicted concentration. Receptors within about a kilometer of the source may be even more sensitive to location. Thus, a dense array of receptors may be required in some cases.

b. For applications involving AERSCREEN, AERSCREEN interfaces with AERMAP to generate the receptor elevations. For applications involving CTSCREEN, digitized contour data must be preprocessed [42] to provide hill shape parameters in suitable input format. The user then supplies receptor locations either through an interactive program that is part of the model or directly, by using a text editor; using both methods to select receptor locations will generally be necessary to assure that the maximum concentrations are estimated by either model. In cases where a terrain feature may "appear to the plume" as smaller, multiple hills, it may be necessary to model the terrain both as a single feature and as multiple hills to determine design concentrations.

c. Other screening techniques may be acceptable for complex terrain cases where established procedures [43] are used. The user is encouraged to confer with the appropriate reviewing authority (paragraph 3.0(b)) if any unforeseen problems are encountered, e.g., applicability, meteorological data, receptor siting, or terrain contour processing issues.

4.2.2 Refined Models

a. A brief description of each preferred model for refined applications is found in appendix A. Also listed in that appendix are availability, the model input requirements, the standard options that shall be selected when running the program, and output options.

4.2.2.1 AERMOD

a. For a wide range of regulatory applications in all types of terrain, and for aerodynamic building downwash, the required model is AERMOD.[44] [45] The AERMOD regulatory modeling system consists of the AERMOD dispersion model, the AERMET meteorological processor, and the AERMAP terrain processor. AERMOD is a steady-state Gaussian plume model applicable to directly emitted air pollutants that employs best state-of-practice parameterizations for characterizing the meteorological influences and dispersion. Differentiation of simple versus complex terrain is unnecessary with AERMOD. In complex terrain, AERMOD employs the well-known dividing-streamline concept in a simplified simulation of the effects of plume-terrain interactions.

b. The AERMOD modeling system has been extensively evaluated across a wide range of scenarios based on numerous field studies, including tall stacks in flat and complex terrain settings, sources subject to building downwash influences, and low-level non-buoyant sources. [27] These evaluations included several long-term field studies associated with operating plants as well as several intensive tracer studies. Based on these evaluations, AERMOD has shown consistently good performance, with "errors" in predicted versus observed peak concentrations, based on the Robust Highest Concentration (RHC) metric, consistently within the range of 10 to 40 percent (cited in paragraph 4.1(e)).

c. AERMOD incorporates the PRIME algorithm to account for enhanced plume growth and restricted plume rise for plumes affected by building wake effects. [46] The PRIME algorithm accounts for entrainment of plume mass into the cavity recirculation region, including re-entrainment of plume mass into the wake region beyond the cavity.

d. AERMOD incorporates the Buoyant Line and Point Source (BLP) Dispersion model to account for buoyant plume rise from line sources. The BLP option utilizes the standard meteorological inputs provided by the AERMET meteorological processor.

e. The state-of-the-science for modeling atmospheric deposition is evolving, new modeling techniques are continually being assessed, and their results are being compared with observations. Consequently, while deposition treatment is available in AERMOD, the approach taken for any purpose shall be coordinated with the appropriate reviewing authority (paragraph 3.0(b)).

4.2.2.2 CTDMPLUS

a. If the modeling application involves an elevated point source with a well-defined hill or ridge and a detailed dispersion analysis of the spatial pattern of plume impacts is of interest, CTDMPLUS is available. CTDMPLUS provides greater resolution of concentrations about the contour of the hill feature than does AERMOD through a different plume-terrain interaction algorithm.

4.2.2.3 OCD

a. If the modeling application involves determining the impact of offshore emissions from point, area, or line sources on the air quality of coastal regions, the recommended model is the OCD (Offshore and Coastal Dispersion) Model. OCD is a straight-line Gaussian model that incorporates overwater plume transport and dispersion as well as changes that occur as the plume crosses the shoreline. OCD is also applicable for situations that involve platform building downwash.

4.2.3 Pollutant Specific Modeling Requirements

4.2.3.1 Models for Carbon Monoxide

a. Models for assessing the impact of CO emissions are needed to meet NSR requirements to address compliance with the CO NAAQS and to determine localized impacts from transportations projects. Examples include evaluating effects of point sources, congested roadway intersections and highways, as well as the cumulative effect of numerous sources of CO in an urban area.

b. The general modeling recommendations and requirements for screening models in section 4.2.1 and refined models in section 4.2.2 shall be applied for CO modeling. Given the relatively low CO background concentrations, screening techniques are likely to be adequate in most cases. In applying these recommendations and requirements, the existing 1992 EPA guidance for screening CO impacts from highways may be consulted. 47

4.2.3.2 Models for Lead

a. In January 1999 (40 CFR part 58, appendix D), the EPA gave notice that concern about ambient lead impacts was being shifted away from roadways and toward a focus on stationary point sources. Thus, models for assessing the impact of lead emissions are needed to meet NSR requirements to address compliance with the lead NAAQS and for SIP attainment demonstrations. The EPA has also issued guidance on siting ambient monitors in the vicinity of stationary point sources. [48] For lead, the SIP should contain an air quality analysis to determine the maximum rolling 3–month average lead concentration resulting from major lead point sources, such as smelters, gasoline additive plants, etc. The EPA has developed a post-processor to calculate rolling 3–month average concentrations from model output. [49] General guidance for lead SIP development is also available. [50]

b. For major lead point sources, such as smelters, which contribute fugitive emissions and for which deposition is important, professional judgment should be used, and there shall be coordination with the appropriate reviewing authority (paragraph 3.0(b)). For most applications, the general requirements for screening and refined models of section 4.2.1 and 4.2.2 are applicable to lead modeling.

4.2.3.3 Models for Sulfur Dioxide

a. Models for SO_2 are needed to meet NSR requirements to address compliance with the SO_2 NAAQS and PSD increments, for SIP attainment demonstrations, [51] and for characterizing current air quality via modeling. [52] SO_2 is one of a group of highly reactive gases known as "oxides of sulfur" with largest emissions sources being fossil fuel combustion at power plants and other industrial facilities.

b. Given the relatively inert nature of SO_2 on the short-term time scales of interest (i.e., 1–hour) and the sources of SO_2 (i.e., stationary point sources), the general modeling requirements for screening models in section 4.2.1 and refined models in section 4.2.2 are applicable for SO_2 modeling applications. For urban areas, AERMOD automatically invokes a half-life of 4 hours [53] to SO_2. Therefore, care must be taken when determining whether a source is urban or rural (see section 7.2.1.1 for urban/rural determination methodology).

4.2.3.4 Models for Nitrogen Dioxide

d. Other sources. That portion of the background attributable to all other sources (e.g., natural sources, minor and distant major sources) should be accounted for through use of ambient monitoring data and determined by the procedures found in section 8.3.2 in keeping with eliminating or reducing the source-oriented impacts from nearby sources to avoid potential double-counting of modeled and monitored contributions.

8.4 Meteorological Input Data

8.4.1 Discussion

a. This subsection covers meteorological input data for use in dispersion modeling for regulatory applications and is separate from recommendations made for photochemical grid modeling. Recommendations for meteorological data for photochemical grid modeling applications are outlined in the latest version of EPA's Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, PM2.5, and Regional Haze. [60] In cases where Lagrangian models are applied for regulatory purposes, appropriate meteorological inputs should be determined in consultation with the appropriate reviewing authority (paragraph 3.0(b)).

b. The meteorological data used as input to a dispersion model should be selected on the basis of spatial and climatological (temporal) representativeness as well as the ability of the individual parameters selected to characterize the transport and dispersion conditions in the area of concern. The representativeness of the measured data is dependent on numerous factors including, but not limited to: (1) The proximity of the meteorological monitoring site to the area under consideration; (2) the complexity of the terrain; (3) the exposure of the meteorological monitoring site; and (4) the period of time during which data are collected. The spatial representativeness of the data can be adversely affected by large distances between the source and receptors of interest and the complex topographic characteristics of the area. Temporal representativeness is a function of the year-to-year variations in weather conditions. Where appropriate, data representativeness should be viewed in terms of the appropriateness of the data for constructing realistic boundary layer profiles and, where applicable, three-dimensional meteorological fields, as described in paragraphs (c) and (d) of this subsection

c. The meteorological data should be adequately representative and may be site-specific data, data from a nearby National Weather Service (NWS) or comparable station, or prognostic meteorological data. The implementation of NWS Automated Surface Observing Stations (ASOS) in the early 1990's should not preclude the use of NWS ASOS data if such a station is determined to be representative of the modeled area. [93]

d. Model input data are normally obtained either from the NWS or as part of a site-specific measurement program. State climatology offices, local universities, FAA, military stations, industry, and pollution control agencies may also be sources of such data. In specific cases, prognostic meteorological data may be appropriate for use and obtained from similar sources. Some recommendations and requirements for the use of each type of data are included in this subsection.

8.4.2 Recommendations and Requirements

a. AERMET [94] shall be used to preprocess all meteorological data, be it observed or prognostic, for use with AERMOD in regulatory applications. The AERMINUTE [95] processor, in most cases, should be used to process 1-minute ASOS wind data for input to AERMET when processing NWS ASOS sites in AERMET. When processing prognostic meteorological data for AERMOD, the Mesoscale Model Interface Program (MMIF) [103] should be used to process data for input to AERMET. Other methods of processing prognostic meteorological data for input to AERMET should be approved by the appropriate reviewing authority. Additionally, the following meteorological preprocessors are recommended by the EPA: PCRAMMET, [96] MPRM, [97] and METPRO. [98] PCRAMMET is the

recommended meteorological data preprocessor for use in applications of OCD employing hourly NWS data. MPRM is the recommended meteorological data preprocessor for applications of OCD employing site-specific meteorological data. METPRO is the recommended meteorological data preprocessor for use with CTDMPLUS.[99]

b. Regulatory application of AERMOD necessitates careful consideration of the meteorological data for input to AERMET. Data representativeness, in the case of AERMOD, means utilizing data of an appropriate type for constructing realistic boundary layer profiles. Of particular importance is the requirement that all meteorological data used as input to AERMOD should be adequately representative of the transport and dispersion within the analysis domain. Where surface conditions vary significantly over the analysis domain, the emphasis in assessing representativeness should be given to adequate characterization of transport and dispersion between the source(s) of concern and areas where maximum design concentrations are anticipated to occur. The EPA recommends that the surface characteristics input to AERMET should be representative of the land cover in the vicinity of the meteorological data, i.e., the location of the meteorological tower for measured data or the representative grid cell for prognostic data. Therefore, the model user should apply the latest version AERSURFACE,[100 101] where applicable, for determining surface characteristics when processing measured meteorological data through AERMET. In areas where it is not possible to use AERSURFACE output, surface characteristics can be determined using techniques that apply the same analysis as AERSURFACE. In the case of prognostic meteorological data, the surface characteristics associated with the prognostic meteorological model output for the representative grid cell should be used.[102 103] Furthermore, since the spatial scope of each variable could be different, representativeness should be judged for each variable separately. For example, for a variable such as wind direction, the data should ideally be collected near plume height to be adequately representative, especially for sources located in complex terrain. Whereas, for a variable such as temperature, data from a station several kilometers away from the source may be considered to be adequately representative. More information about meteorological data, representativeness, and surface characteristics can be found in the AERMOD Implementation Guide.[76]

c. Regulatory application of CTDMPLUS requires the input of multi-level measurements of wind speed, direction, temperature, and turbulence from an appropriately sited meteorological tower. The measurements should be obtained up to the representative plume height(s) of interest. Plume heights of interest can be determined by use of screening procedures such as CTSCREEN.

d. Regulatory application of OCD requires meteorological data over land and over water. The over land or surface data, processed through PCRAMMET[96] or MPRM,[97] that provides hourly stability class, wind direction and speed, ambient temperature, and mixing height, are required. Data over water requires hourly mixing height, relative humidity, air temperature, and water surface temperature. Missing winds are substituted with the surface winds. Vertical wind direction shear, vertical temperature gradient, and turbulence intensities are optional.

e. The model user should acquire enough meteorological data to ensure that worst-case meteorological conditions are adequately represented in the model results. The use of 5 years of adequately representative NWS or comparable meteorological data, at least 1 year of site-specific, or at least 3 years of prognostic meteorological data, are required. If 1 year or more, up to 5 years, of site-specific data are available, these data are preferred for use in air quality analyses. Depending on completeness of the data record, consecutive years of NWS, site-specific, or prognostic data are preferred. Such data must be subjected to quality assurance procedures as described in section 8.4.4.2.

f. Objective analysis in meteorological modeling is to improve meteorological analyses (the "first guess field") used as initial conditions for prognostic meteorological models by incorporating information from meteorological observations. Direct and indirect (using remote sensing techniques) observations of temperature, humidity, and wind from surface and radiosonde reports are commonly employed to improve these analysis fields. For long-range transport applications, it is recommended that objective analysis procedures, using direct and indirect meteorological observations, be employed in preparing input fields to produce prognostic meteorological datasets. The length of record of observations should conform to recommendations outlined in paragraph 8.4.2(e) for prognostic meteorological model datasets.

8.4.3 National Weather Service Data

8.4.3.1 Discussion

a. The NWS meteorological data are routinely available and familiar to most model users. Although the NWS does not provide direct measurements of all the needed dispersion model input variables, methods have been developed and successfully used to translate the basic NWS data to the needed model input. Site-specific measurements of model input parameters have been made for many modeling studies, and those methods and techniques are becoming more widely applied, especially in situations such as complex terrain applications, where available NWS data are not adequately representative. However, there are many modeling applications where NWS data are adequately representative and the applications still rely heavily on the NWS data.

b. Many models use the standard hourly weather observations available from the National Centers for Environmental Information (NCEI).[b] These observations are then preprocessed before they can be used in the models. Prior to the advent of ASOS in the early 1990's, the standard "hourly" weather observation was a human-based observation reflecting a single 2–minute average generally taken about 10 minutes before the hour. However, beginning in January 2000 for first-order stations and in March 2005 for all stations, the NCEI has archived the 1–minute ASOS wind data (i.e., the rolling 2–minute average winds) for the NWS ASOS sites. The AERMINUTE processor [95] was developed to reduce the number of calm and missing hours in AERMET processing by substituting standard hourly observations with full hourly average winds calculated from 1–minute ASOS wind data.

8.4.3.2 Recommendations

a. The preferred models listed in appendix A all accept, as input, the NWS meteorological data preprocessed into model compatible form. If NWS data are judged to be adequately representative for a specific modeling application, they may be used. The NCEI makes available surface [104] [105] and upper air [106] meteorological data online and in CD–ROM format. Upper air data are also available at the Earth System Research Laboratory Global Systems Divisions Web site (http://esrl.noaa.gov/gsd).

b. Although most NWS wind measurements are made at a standard height of 10 m, the actual anemometer height should be used as input to the preferred meteorological processor and model.

c. Standard hourly NWS wind directions are reported to the nearest 10 degrees. Due to the coarse resolution of these data, a specific set of randomly generated numbers has been developed by the EPA and should be used when processing standard hourly NWS data for use in the preferred EPA models to ensure a lack of bias in wind direction assignments within the models.

d. Beginning with year 2000, NCEI began archiving 2–minute winds, reported every minute to the nearest degree for NWS ASOS sites. The AERMINUTE processor was developed to read those winds and calculate hourly average winds for input to AERMET. When such data are available for the NWS ASOS site being processed, the AERMINUTE processor should be used, in most cases, to calculate hourly average wind speed and direction when processing NWS ASOS data for input to AERMOD.[93]

e. Data from universities, FAA, military stations, industry and pollution control agencies may be used if such data are equivalent in accuracy and detail (e.g., siting criteria, frequency of observations, data completeness, etc.) to the NWS data, they are judged to be adequately representative for the particular application, and have undergone quality assurance checks.

f. After valid data retrieval requirements have been met,[107] large number of hours in the record having missing data should be treated according to an established data substitution protocol provided that adequately representative alternative data are available. Data substitution guidance is provided in section 5.3 of reference.[107] If no representative alternative data are available for substitution, the absent data should be coded as missing using missing data codes appropriate to the applicable meteorological pre-processor. Appropriate model options for treating missing data, if available in the model, should be employed.

8.4.4 Site–Specific Data

8.4.4.1 Discussion

a. Spatial or geographical representativeness is best achieved by collection of all of the needed model input data in close proximity to the actual site of the source(s). Site-specific measured data are, therefore, preferred as model input, provided that appropriate instrumentation and quality assurance procedures are followed, and that the data collected are adequately representative (free from inappropriate local or microscale influences) and compatible with the input requirements of the model to be used. It should be noted that, while site-specific measurements are frequently made "on-property" (i.e., on the source's premises), acquisition of adequately representative site-specific data does not preclude collection of data from a location off property. Conversely, collection of meteorological data on a source's property does not of itself guarantee adequate representativeness. For help in determining representativeness of site-specific measurements, technical guidance[107] is available. Site-specific data should always be reviewed for representativeness and adequacy by an experienced meteorologist, atmospheric scientist, or other qualified scientist in consultation with the appropriate reviewing authority (paragraph 3.0(b)).

8.4.4.2 Recommendations

a. The EPA guidance[107] provides recommendations on the collection and use of site-specific meteorological data. Recommendations on characteristics, siting, and exposure of meteorological instruments and on data recording, processing, completeness requirements, reporting, and archiving are also included. This publication should be used as a supplement to other limited guidance on these subjects.[5 91 108 109] Detailed information on quality assurance is also available.[110] As a minimum, site-specific measurements of ambient air temperature, transport wind speed and direction, and the variables necessary to estimate atmospheric dispersion should be available in meteorological datasets to be used in modeling. Care should be taken to ensure that meteorological instruments are located to provide an adequately representative characterization of pollutant transport between sources and receptors of interest. The appropriate reviewing authority (paragraph 3.0(b)) is available to help determine the appropriateness of the measurement locations.

i. Solar radiation measurements. Total solar radiation or net radiation should be measured with a reliable pyranometer or net radiometer sited and operated in accordance with established site-specific meteorological guidance. [107] [110]

ii. Temperature measurements. Temperature measurements should be made at standard shelter height (2m) in accordance with established site-specific meteorological guidance. [107]

iii. Temperature difference measurements. Temperature difference (DT) measurements should be obtained using matched thermometers or a reliable thermocouple system to achieve adequate accuracy. Siting, probe placement, and operation of DT systems should be based on guidance found in Chapter 3 of reference 107 and such guidance should be followed when obtaining vertical temperature gradient data. AERMET may employ the Bulk Richardson scheme, which requires measurements of temperature difference, in lieu of cloud cover or insolation data. To ensure correct application and acceptance, AERMOD users should consult with the appropriate reviewing authority (paragraph 3.0(b)) before using the Bulk Richardson scheme for their analysis.

iv. Wind measurements. For simulation of plume rise and dispersion of a plume emitted from a stack, characterization of the wind profile up through the layer in which the plume disperses is desirable. This is especially important in complex terrain and/or complex wind situations where wind measurements at heights up to hundreds of meters above stack base may be required in some circumstances. For tall stacks when site-specific data are needed, these winds have been obtained traditionally using meteorological sensors mounted on tall towers. A feasible alternative to tall towers is the use of meteorological remote sensing instruments (e.g., acoustic sounders or radar wind profilers) to provide winds aloft, coupled with 10–meter towers to provide the near-surface winds. Note that when site-specific wind measurements are used, AERMOD, at a minimum, requires wind observations at a height above ground between seven times the local surface roughness height and 100 m. (For additional requirements for AERMOD and CTDMPLUS, see appendix A.) Specifications for wind measuring instruments and systems are contained in reference 107.

b. All processed site-specific data should be in the form of hourly averages for input to the dispersion model.

i. Turbulence data. There are several dispersion models that are capable of using direct measurements of turbulence (wind fluctuations) in the characterization of the vertical and lateral dispersion (e.g., CTDMPLUS or AERMOD). When turbulence data are used to directly characterize the vertical and lateral dispersion, the averaging time for the turbulence measurements should be 1 hour. For technical guidance on processing of turbulence parameters for use in dispersion modeling, refer to the user's guide to the meteorological processor for each model (see section 8.4.2(a)).

ii. Stability categories. For dispersion models that employ P–G stability categories for the characterization of the vertical and lateral dispersion, the P–G stability categories, as originally defined, couple near-surface measurements of wind speed with subjectively determined insolation assessments based on hourly cloud cover and ceiling height observations. The wind speed measurements are made at or near 10 m. The insolation rate is typically assessed using observations of cloud cover and ceiling height based on criteria outlined by Turner. [72] It is recommended that the P–G stability category be estimated using the Turner method with site-specific wind speed measured at or near 10 m and representative cloud cover and ceiling height. Implementation of the Turner method, as well as considerations in determining representativeness of cloud cover and ceiling height in cases for which site-specific cloud observations are unavailable, may be found in section 6 of reference 107. In the absence of requisite data to implement the Turner method, the solar radiation/delta–T (SRDT) method or wind fluctuation statistics (i.e., the $\#_E$ and $\#_A$ methods) may be used.

iii. The SRDT method, described in section 6.4.4.2 of reference 107, is modified slightly from that published from earlier work [111] and has been evaluated with three site-specific databases. [112] The two methods of stability classification that

use wind fluctuation statistics, the $\#_E$ and $\#_A$ methods, are also described in detail in section 6.4.4 of reference 107 (note applicable tables in section 6). For additional information on the wind fluctuation methods, several references are available. [113] [114] [115] [116]

c. Missing data substitution. After valid data retrieval requirements have been met, [107] hours in the record having missing data should be treated according to an established data substitution protocol provided that adequately representative alternative data are available. Such protocols are usually part of the approved monitoring program plan. Data substitution guidance is provided in section 5.3 of reference 107. If no representative alternative data are available for substitution, the absent data should be coded as missing, using missing data codes appropriate to the applicable meteorological pre-processor. Appropriate model options for treating missing data, if available in the model, should be employed.

8.4.5 Prognostic Meteorological Data

8.4.5.1 Discussion

a. For some modeling applications, there may not be a representative NWS or comparable meteorological station available (e.g., complex terrain), and it may be cost prohibitive or infeasible to collect adequately representative site-specific data. For these cases, it may be appropriate to use prognostic meteorological data, if deemed adequately representative, in a regulatory modeling application. However, if prognostic meteorological data are not representative of transport and dispersion conditions in the area of concern, the collection of site-specific data is necessary.

b. The EPA has developed a processor, the MMIF, [102] to process MM5 (Mesoscale Model 5) or WRF (Weather Research and Forecasting) model data for input to various models including AERMOD. MMIF can process data for input to AERMET or AERMOD for a single grid cell or multiple grid cells. MMIF output has been found to compare favorably against observed data (site-specific or NWS). [117] Specific guidance on processing MMIF for AERMOD can be found in reference 103. When using MMIF to process prognostic data for regulatory applications, the data should be processed to generate AERMET inputs and the data subsequently processed through AERMET for input to AERMOD. If an alternative method of processing data for input to AERMET is used, it must be approved by the appropriate reviewing authority (paragraph 3.0(b)).

8.4.5.2 Recommendations

a. Prognostic model evaluation. Appropriate effort by the applicant should be devoted to the process of evaluating the prognostic meteorological data. The modeling data should be compared to NWS observational data or other comparable data in an effort to show that the data are adequately replicating the observed meteorological conditions of the time periods modeled. An operational evaluation of the modeling data for all model years (i.e., statistical, graphical) should be completed. [60] The use of output from prognostic mesoscale meteorological models is contingent upon the concurrence with the appropriate reviewing authority (paragraph 3.0(b)) that the data are of acceptable quality, which can be demonstrated through statistical comparisons with meteorological observations aloft and at the surface at several appropriate locations. [60]

b. Representativeness. When processing MMIF data for use with AERMOD, the grid cell used for the dispersion modeling should be adequately spatially representative of the analysis domain. In most cases, this may be the grid cell containing the emission source of interest. Since the dispersion modeling may involve multiple sources and the domain may cover several grid cells, depending on grid resolution of the prognostic model, professional judgment may be needed

Code of Federal Regulations
Title 40. Protection of Environment
Chapter I. Environmental Protection Agency (Refs & Annos)
Subchapter C. Air Programs
Part 51. Requirements for Preparation, Adoption, and Submittal of Implementation Plans (Refs & Annos)
Subpart BB. Data Requirements for Characterizing Air Quality for the Primary so_2 Naaqs (Refs & Annos)

40 C.F.R. § 51.1203

§ 51.1203 Air agency requirements.

Effective: September 21, 2015
Currentness

(a) The air agency shall submit a list of applicable SO_2 sources identified pursuant to § 51.1202 located in its jurisdiction to the EPA by January 15, 2016. This list may be revised by the Regional Administrator after review based on available SO_2 emissions data.

(b) For each source area subject to requirements for air quality characterization, the air agency shall notify the EPA by July 1, 2016, whether it has chosen to characterize peak 1–hour SO_2 concentrations in such area through ambient air quality monitoring; characterize peak 1–hour SO_2 concentrations in such area through air quality modeling techniques; or provide federally enforceable emission limitations by January 13, 2017 that limit emissions of applicable sources to less than 2,000 tpy, in accordance with paragraph (e) of this section, or provide documentation that the applicable source has permanently shut down. Emission limits in accordance with paragraph (e) of this section may be established in lieu of conducting monitoring or modeling unless, in the judgment of the air agency or the EPA Regional Administrator, the area warrants further air quality characterization even with the establishment of any new emission limit(s). If the air agency has chosen to establish requirements to limit emissions for applicable sources in an area, the notification from the air agency shall describe the requirements and emission limits the air agency intends to apply. For any area with multiple applicable sources, the air agency (or air agencies if a multi-state area) shall use the same technique (monitoring, modeling, or emissions limitation) for all applicable sources in the area. If multiple air agencies have applicable sources in an area, the air agencies must consult with each other to employ a common technique for the area.

(c) Monitoring. For each area identified in the notification submitted pursuant to paragraph (b) of this section as an area for which SO_2 concentrations will be characterized through ambient monitoring, the required monitors shall be sited and operated either as SLAMS or in a manner equivalent to SLAMS. In either case, monitors shall meet applicable criteria in 40 CFR part 58, appendices A, C, and E and their data shall be subject to data certification and reporting requirements as prescribed in 40 CFR 58.15 and 58.16. These requirements include quarterly reporting of monitoring data to the Air Quality System, and the annual certification of data by May 1 of the following year.

(1) The air agency shall include relevant information about monitors used to meet the requirements of this paragraph (c) in the air agency's Annual Monitoring Network Plan required by 40 CFR 58.10 due July 1, 2016. The air agency shall consult with the appropriate EPA Regional Office in the development of plans to install, supplement, or

maintain an appropriate ambient SO_2 monitoring network pursuant to the requirements of 40 CFR part 58 and of this subpart.

(2) All existing, new, or relocated ambient monitors intended to meet the requirements of this paragraph (c) must be operational by January 1, 2017 and must be operated continually until approved for shut down by EPA.

(3) Any SO_2 monitor identified by an air agency in its approved Annual Monitoring Network Plan as having the purpose of meeting the requirements of this paragraph (c) that: Is not located in an area designated as nonattainment as the 2010 SO_2 NAAQS is not also being used to satisfy other ambient SO_2 minimum monitoring requirements listed in 40 CFR part 58, appendix D, section 4.4; and is not otherwise required as part of a SIP, permit, attainment plan or maintenance plan, may be eligible for shut down upon EPA approval if it produces a design value no greater than 50 percent of the 2010 SO_2 NAAQS from data collected in either its first or second 3–year period of operation. The air agency must receive EPA Regional Administrator approval of a request to cease operation of the monitor as part of the EPA's action on the Annual Monitoring Network Plan under 40 CFR 58.10 prior to shutting down any qualifying monitor under this paragraph (c).

(d) Modeling. For each area identified in the notification submitted pursuant to paragraph (b) of this section as an area for which SO_2 concentrations will be characterized through air quality modeling, the air agency shall submit by July 1, 2016, a technical protocol for conducting such modeling to the Regional Administrator for review. The air agency shall consult with the appropriate EPA Regional Office in developing these modeling protocols.

(1) The modeling protocol shall include information about the modeling approach to be followed, including but not limited to the model to be used, modeling domain, receptor grid, emissions dataset, meteorological dataset and how the air agency will account for background SO_2 concentrations.

(2) Modeling analyses shall characterize air quality based on either actual SO_2 emissions from the most recent 3 years, or on any federally enforceable allowable emission limit or limits established by the air agency or the EPA and that are effective and require compliance by January 13, 2017.

(3) Except as provided by § 51.1204, the air agency shall conduct the modeling analysis for any applicable source identified by the air agency pursuant to paragraph (a) of this section, and for its associated area and any nearby area, as applicable, and submit the modeling analysis to the EPA Regional Office by January 13, 2017.

(e) Federally enforceable requirement to limit SO_2 emissions to under 2,000 tons per year. For each area identified in the notification submitted pursuant to paragraph (b) of this sectionas an area for which the air agency will adopt federally enforceable requirements in lieu of characterizing air quality through monitoring or modeling, the air agency shall submit documentation to the EPA by January 13, 2017, showing that such requirements have been adopted, are in effect, and been made federally enforceable by January 13, 2017, through an appropriate legal mechanism, and the provisions either:

(1) Require the applicable sources in the area to emit less than 2,000 tons of SO_2 per year for calendar year 2017 and thereafter; or

(2) Document that the applicable sources in the area have permanently shut down by January 13, 2017.

SOURCE: 36 FR 22398, Nov. 25, 1971; 52 FR 24712, July 1, 1987; 55 FR 14249, April 17, 1990; 56 FR 42219, Aug. 26, 1991; 57 FR 32334, July 21, 1992; 57 FR 52987, Nov. 5, 1992; 58 FR 38821, July 20, 1993; 60 FR 40100, Aug. 7, 1995; 62 FR 8328, Feb. 24, 1997; 62 FR 43801, Aug. 15, 1997; 62 FR 44903, Aug. 25, 1997; 63 FR 24433, May 4, 1998; 64 FR 35763, July 1, 1999; 65 FR 45532, July 24, 2000; 72 FR 28613, May 22, 2007; 80 FR 51087, Aug. 21, 2015, unless otherwise noted.

AUTHORITY: 23 U.S.C. 101; 42 U.S.C. 7401–7671q.

Current through February 8, 2018; 83 FR 5572.

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Missouri Code of State Regulations Currentness
Title 10. Department of Natural Resources
Division 10 - Air Conservation Commission
Chapter 6 - Air Quality Standards, Definitions, Sampling and Reference Methods and Air Pollution Control Regulations for the Entire State of Missouri

10 Mo. Code of State Regulations 10-6.261

10 CSR 10-6.261 Control of Sulfur Dioxide Emissions

PURPOSE: This rule establishes requirements for emission units emitting sulfur dioxide (SO_2). These requirements are necessary to comply with the one (1)-hour SO_2 National Ambient Air Quality Standard (NAAQS) and to maintain existing SO_2 regulatory requirements previously found in 10 CSR 10-6.260 that were in place prior to the establishment of the one (1)-hour SO_2 NAAQS. The rule consolidates, streamlines, and updates existing regulatory requirements in accordance with 536.175, RSMo. The evidence supporting the need for this proposed rulemaking, per 536.016, RSMo, is a June 22, 2010, ***Federal Register*** *rule that established a new one (1)-hour SO_2 standard and an August 5, 2013,* ***Federal Register*** *rule that established one (1)-hour SO_2 nonattainment areas.*

(1) Applicability. This rule applies to any source that emits sulfur dioxide (SO_2). The following exceptions apply to any source not listed in Table I of this rule. Upon request of the director, owners or operators must furnish the director information to confirm that an exception criterion is met.

(A) Individual units fueled exclusively with natural gas (as defined in 40 CFR 72.2) or liquefied petroleum gas as defined by American Society for Testing and Materials (ASTM) International or any combination of these fuels as of December 31, 2016;

(B) Individual indirect heating units with a rated capacity less than or equal to three hundred fifty thousand British thermal units (350,000 Btus) per hour actual heat input; or

(C) Individual units subject to a more restrictive SO_2 emission limit or more restrictive fuel sulfur content limit under -

1. 10 CSR 10-6.070; or

2. Any federally enforceable permit.

(2) Definitions. Definitions of certain terms specified in this rule may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) SO_2 Emission Limits. No later than January 1, 2017, owners or operators of sources and units listed in Table I of this rule must limit their SO_2 emissions as specified. As of the effective date of this rule, owners or operators of sources listed in Table II of this rule must limit their SO_2 emissions as specified.

Table I - Sources with SO_2 emission limits necessary to address the one (1)-hour SO_2 National Ambient Air Quality Standard [FNa]

[FNa]

. Any Table I source/unit fueled by coal, diesel, or fuel oil shall require an SO_2 Continuous Emission Monitoring System (CEMS) and owners or operators must follow all applicable requirements per subparagraph (3)(E)1.B. of this rule. Any source/unit that is fueled by natural gas (or changes fuels to natural gas no later than January 1, 2017) shall no longer require SO_2 CEMS for such units beginning with the completion date of the fuel change to natural gas.

Source	Source ID	Emission Limit per Source/ Unit (Pounds SO_2 per Hour)	Averaging Time
Ameren Missouri — Labadie Energy Center	0710003	40,837	24-hour block average
Ameren Missouri — Meramee Energy Center	1890010	7,371	24-hour block average
Ameren Missouri — Rush Island Energy Center	0990016	13,600	24-hour block average
Independence Power and Light — Blue Valley Station Unit 1 Unit 2 Unit 3	0950050	Natural gas Natural gas Natural gas	N.A. N.A. N.A.
Kansas City Power and Light Co. — Hawthorn Station Boiler #5 Combustion turbine 7 Combustion turbine 8 Combustion turbine 9	0950022	785 Natural gas Natural gas Natural gas	30-day rolling N.A. N.A. N.A.
Kansas City Power and Light Co. Sibley Generating Station Boiler #1 Boiler #2 Boiler #3	0950031	1,468.17 1,447.01 10,632.02	30-day rolling 30-day rolling 30-day rolling

Veolia Energy Kansas City Inc. — Grand Ave. Station Boiler 1A Boiler 6 & 8 Boiler 7	0950021	0.5 351.8 0.5	1 hour 1 hour 1 hour

Table II - Sources subject to SO_2 emission limits in place prior to 2010

Source	Source ID	Emission Limit per Source (Pounds SO_2 per Million Btus Actual Heat Input)	Averaging Time
Associated Electric Coop, Inc. — Chamois Plant	1510002	6.7	3 hours
Empire District Electric Company — Asbury Plant	0970001	12.0	3 hours
New Madrid Power Plant — Marston	1430004	10.0	3 hours
Thomas Hill Energy Center Power Division — Thomas Hill	1750001	8.0	3 hours
University of Missouri (MU) Columbia Power Plant	0190004	8.0	3 hours
Kansas City Power and Light Co. — Montrose Generating Station	0830001	3.9	24 hours
Ameren Missouri — Sioux Plant	1830001	4.8	Daily average, 00:01 to 24:00
Doe Run Company — Buick Resource Recycling Facility	0930009	8,650 pounds SO_2/hr	1-hour test repeated 3 times

(B) Owners or operators of indirect heating sources with a total capacity, excluding exempt units, greater than three hundred fifty thousand British thermal units (350,000 Btus) per hour actual heat input must limit their SO_2 emissions as follows:

AUTHORITY: section 643.050, RSMo Supp. 2013. [FNa] *Original rule filed April 10, 2015, effective Nov. 30, 2015.* [FNa]
. Original authority: 643.050, RSMo 1965, amended 1972, 1992, 1993, 1995, 2011.

Current through December 31, 2017

10 Mo. Code of State Regulations 10-6.261, 10 MO ADC 10-6.261

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